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Telephony®

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Mechanized filing unit brings new speed and accuracy in housing, pulling and re-filing coin box keys for the Southwestern Bell Telephone Co. **See p. 34 for full story on technique.**

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FLASHES AND PLUGS

QUACK, QUACK OR BEEP, BEEP? A certain telephone company engineer likes to hunt ducks, and it seemed to him when his decoys moved in the water, they appeared more attractive to real ducks.

The engineering mind went to work, and after some slide-rule computations, and with the help of some stray parts from his work shop, he produced an original creation. This was a transistorized duck, which he promptly dubbed "Herman".

The inner works of "Herman" consist of a transistor radio, which controls two toy electric motors, plus a rudder for steering, and these enable Herman to "swim" about in a realistic fashion. A small transistor on shore is controlled by the engineer-inventor.

But the inventor has a problem. His decoy, "Herman," works fine, but how are other hunters going to know that "Herman" is transistorized and not to be blasted out of the water?

•

EXPONENT OF THE NEED. The Associated Press reported recently that a memory expert in Belgrade, Yugoslavia had his students guessing. The expert was a lecturer on the medical college faculty, but when time came for his lecture, he did not appear.

A telephone call to his home revealed that he had gone to the academy of science building. Apparently, he had forgotten that he had a lecture date.

The title of his lecture was, appropriately: "Memory and Forgetfulness."

•

NOT A BUZZIN' COUSIN. William Bowden, an inspector for the East Ohio Gas Co., patrols 1,433 miles of transmission lines for his company, and does this from the air. Painted in unmistakable letters on the wings and fuselage of his plane is the word, "Patrol."

Why must his inspection operation be so obvious, he has been asked.

"In an unmarked plane," answers Bowden, "people who haven't seen me before might take me for a kid buzzing the barn and telephone the sheriff."

•

WHAT A TEAM! The Los Angeles *Times* reports that the eleventh Mrs. Tommy Manville, a German-born bride, has taken the trouble to find out about American economics. When offered the usual large diamond engagement ring, she turned it down and expressed a desire for AT&T stock.

Her happy bridegroom, a large stockholder in the AT&T, indulged her preference for securities.

It is suggested that if "diamonds are a girl's best friend," perhaps, they are warmed by the comforting companionship of stock certificates.

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

January 30, 1960

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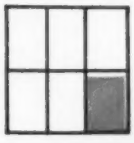
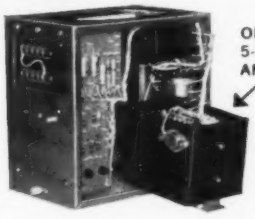


COMMON EQUIPMENT UNIT



Contains, for all frequencies: ample battery filter, remote control relay, audible ringing tone generator with (optional) 5-watt tone amplifier.

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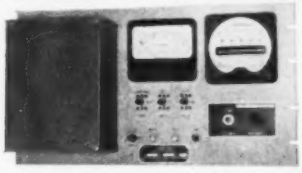

Connects two ringing machines together with either as the main machine, the other as standby. Load is automatically transferred to the standby and alarm is operated on partial or complete failure of the main. Manual transfer possible to check the standby. Either machine supplies load while other is metered for adjustment or tested with simulated ringing failure. Other panels available: portable, manual transfer and supervisory.

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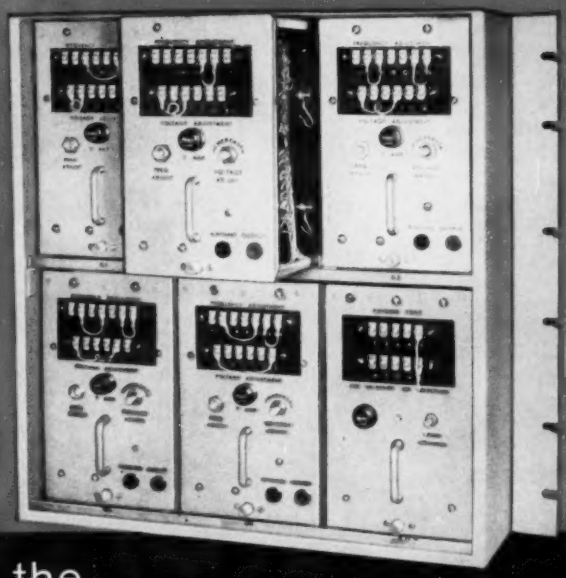
(Conservative ratings)
Model T: output 25 watts per frequency.
Fits 19″ rack, adapts to 23″ and 30″.
Takes only 17½″ vertical rack space.
Model T50: output 50 watts per frequency.

Write for Bulletin 177A

NEW!



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★ **ADJUSTS TO ANY FIVE FREQUENCIES**
from 15 to 66-2/3 cycles. Screwdriver adjusts any generator unit to new setting in as little as two minutes.

★ **SELF-PROTECTING**
when ringing into a short circuit.

★ **SINE-WAVE OUTPUT**
...the ideal ringing power.

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THE ONLY COMPLETE LINE OF POWER EQUIPMENT FOR COMMUNICATIONS

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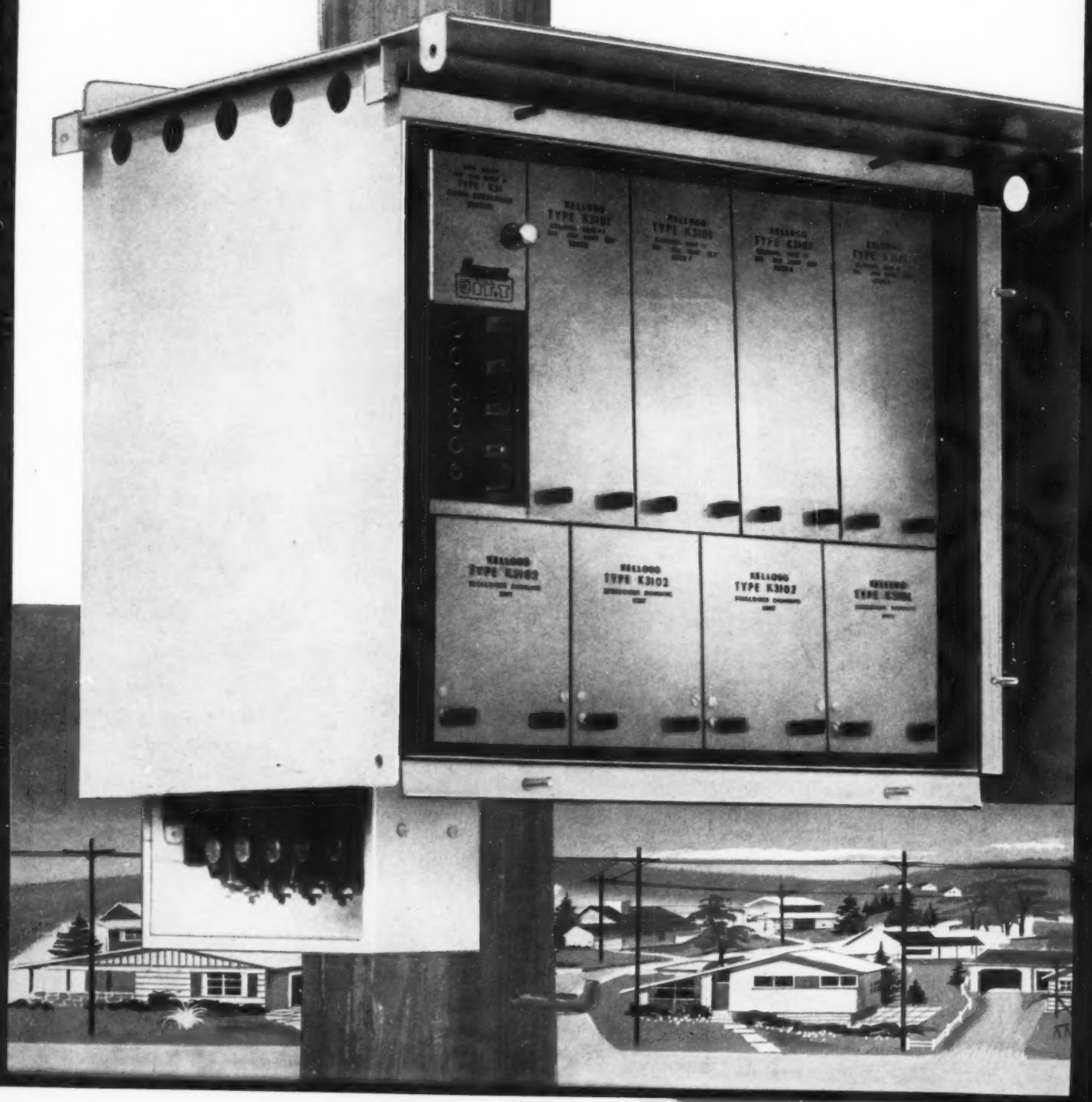

ulation growth needs...

Kellogg Carrier

No industry knows better than America's independent telephone companies the strains that an explosive population growth can cause. Service demands tax existing facilities to the utmost and put many operating companies in a tight financial squeeze.

If you have put off a major cable expansion because of the need to conserve capital, then Kellogg Carrier is your answer. Here's why: low-cost Kellogg Carrier can add from one to eight additional rural lines on an existing wire!

The result of expert Kellogg-ITT research, both the K-31 Rural Subscriber Carrier and K-32 Open Wire Trunk Carrier have been rigorously field tested and are in active operating service throughout the country. Both Systems provide economical means to expand existing facilities without sacrificing toll standard quality.

And with Kellogg's *exclusive* repeaters, carrier system mileage can be doubled (using one repeater) . . . *tripled* with two repeaters . . . or *quadrupled* with three repeaters! You'll find, too, that Kellogg Carrier has more exclusive features and is priced lower than any other comparable system on the market.

For complete technical details write Kellogg's Carrier Division at 2912 Wake Forest Road, Raleigh, North Carolina, or see your local Kellogg representative.

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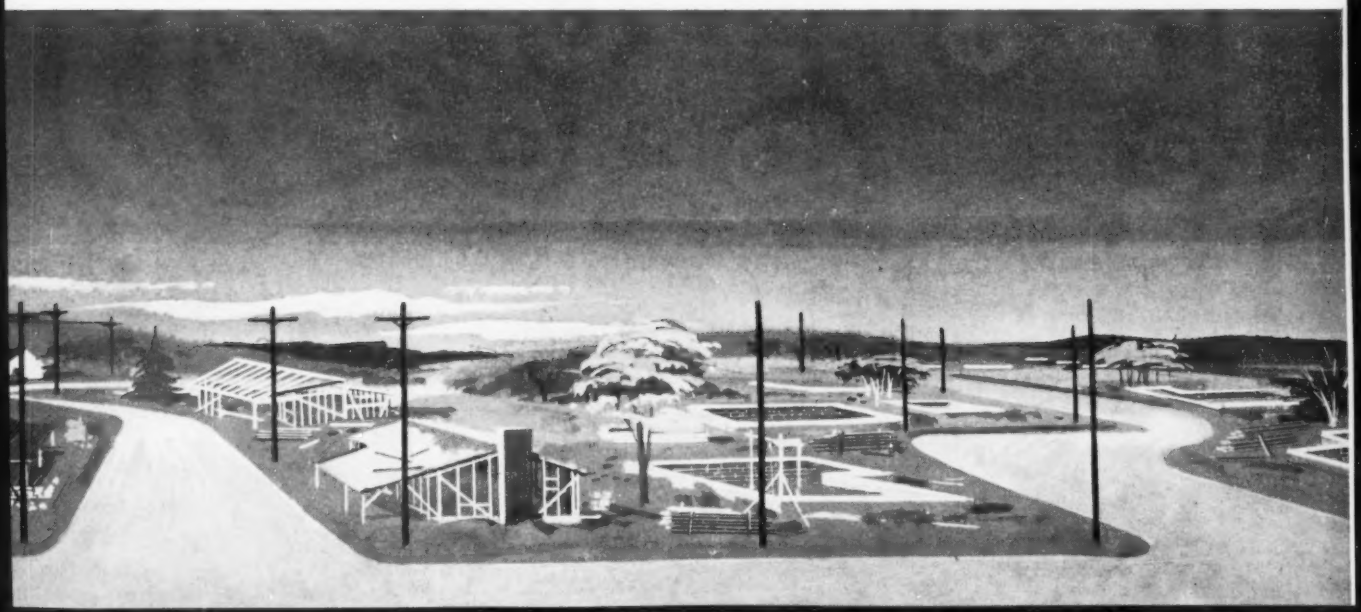


Save $26 to '60 FORD

That's your first saving—but not your last! Save again with over twice the front tire life! Again with 25.2% greater gas mileage! And it's all certified in tests by independent experts!

We're talking about big money . . . real money . . . *your* money! And there's no question about saving it! Of all the leading makes, Ford Light- and Medium-Duty Trucks are the lowest priced, straight across the board! But initial price savings are just the start!

TRUE TRUCK-TYPE SUSPENSION CUTS TIRE WEAR

Ford Pickups are mustang-tough—built for the roughest going, with the proven truck-type front suspension. However, some 1960 trucks use a soft-type independent suspension which wears out front tires twice as fast. Certified tests by independent research engineers* have proved this. And the difference in wear, over the life of a pickup truck, can amount to $300 in tire savings; even more on a medium-duty truck!

HIGHEST IN GAS MILEAGE!

1960 Ford Pickups are gluttons for *work*—not for gas! That's proved by certified economy tests of Ford's modern six-cylinder engine! It's the same dependable cost-cutter that scored 25.2% more gas mileage than the average of all competitive makes in Economy Showdown U.S.A.!

SIGNED, SEALED CERTIFIED SAVINGS!

Yes, this year, if you buy a Ford instead of a competitive truck, you can be sure to save—Ford's economy is certified! Check the certified records yourself in your Ford Dealer's "Certified Economy Reports"...see and drive the new Ford Trucks . . . check the price tags . . . *and you'll save for sure!*

**Names on request. See your Ford Dealer.*

FORD TRUCKS

$246 on a Truck!

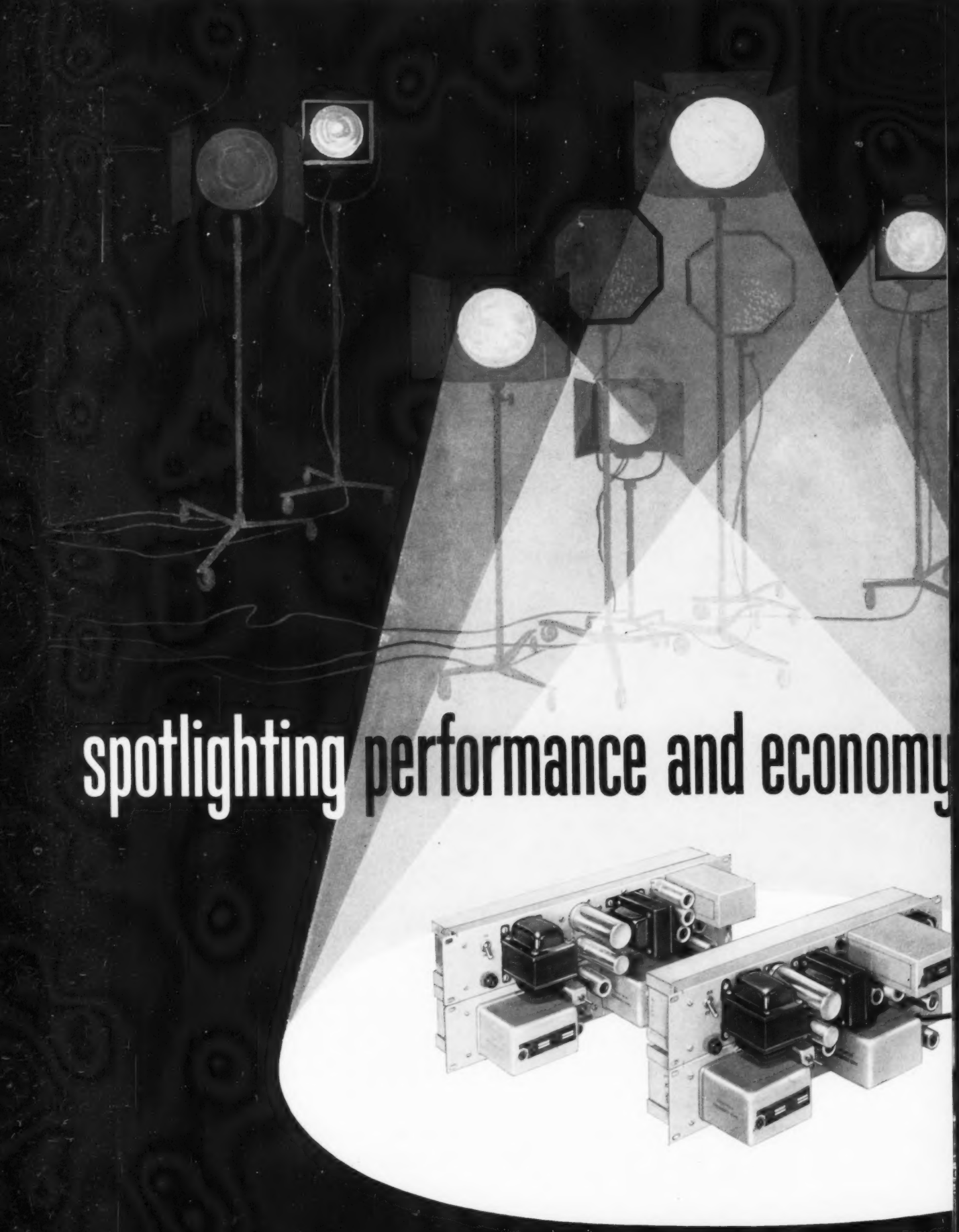
PRICED BELOW ALL OTHER LEADING TRUCK MAKES**

	FORD SAVES YOU
HALF-TON PICKUPS	
F-100 CLASS	$33 TO $181
HALF-TON PANEL	
F-100 CLASS	$40 TO $161
THREE-QUARTER TON PICKUPS	
F-250 CLASS	$32 TO $185
TON-AND-A-HALF STAKES	
F-500 CLASS	$26 TO $246
TWO-TON STAKES	
F-600 CLASS	$33 TO $141

**Based on a comparison of the latest available manufacturers' suggested retail delivered prices, including Federal excise tax, excluding dealer preparation, conditioning and destination charges.

COST LESS

...LESS TO BUY...LESS TO OWN...
BUILT TO LAST LONGER, TOO!


spotlighting performance and economy

Initially, North engineers designed North Carrier equipment to meet the specific requirements of the Independent Telephone Companies—efficiency, simplicity and economy!

In the years since its introduction, North Carrier has been put through constant refinement by a continuous program of study, analysis, check and recheck, test and development.

From the field and the laboratory, North Engineers have drawn on in-use experience to make North Carrier the best buy on the market today—*in performance and economy!*

.... in North Carrier

ANOTHER PRODUCT FOR ADVANCED TELEPHONY FROM THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

GALION, OHIO

AUTOMATIC RECORDER-ANNOUNCERS

Choose from 5 models—to save money—to make money!

With a Recorder-Announcer, you make intercept announcements and give public service messages, *automatically!* You save on labor costs because operators are relieved for other duties. And, you can make an announcer pay for itself quickly by selling advertising time to sponsors. Automatic Recorder-Announcers save money, and make money for you.

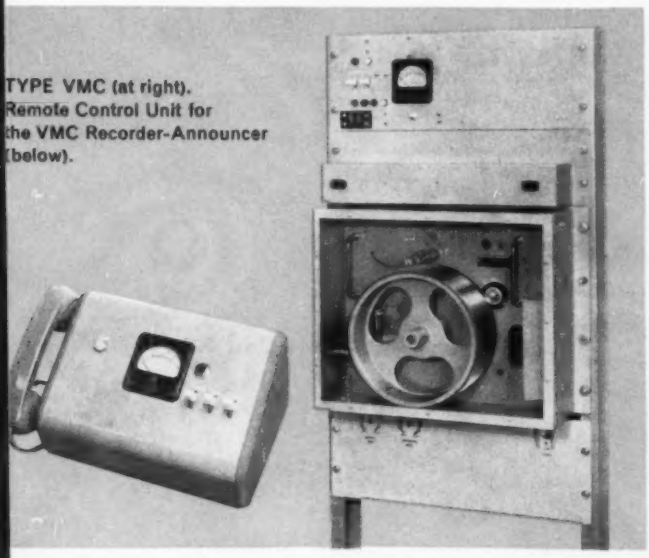
Automatic Electric offers a complete line of Recorder-Announcers for giving any type of message. These precision-engineered machines use magnetic recorders for lifelike reproduction. Messages are free from annoying breaks or changes of pitch. Current consumption is low, even when an announcer is run continuously.

One or more of the announcers shown here would be ideal for your exchange. For further details, write: *Automatic Electric Sales Corporation, Northlake, Illinois. Or call, Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto, 16.*

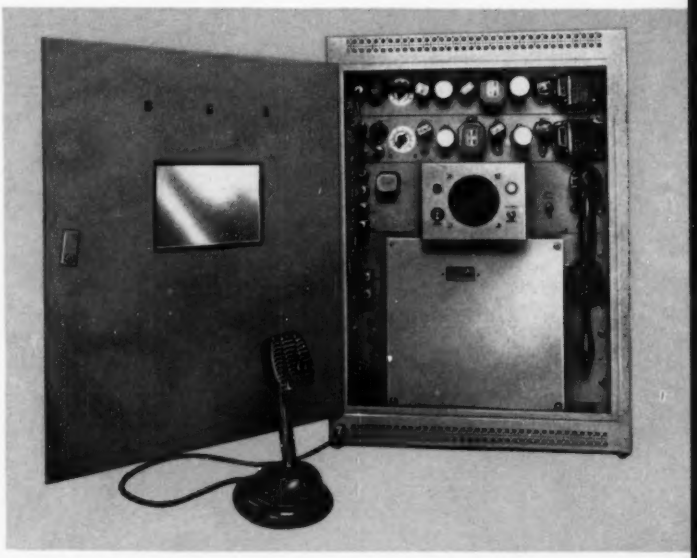
TIME ANNOUNCER automatically broadcasts the correct time every 15 seconds with a message between announcements. Some telephone companies use the "between" time for giving public service messages. Others sell it for sponsored commercial messages. Any way you use it, the Automatic Time Announcer is a revenue-builder for you!

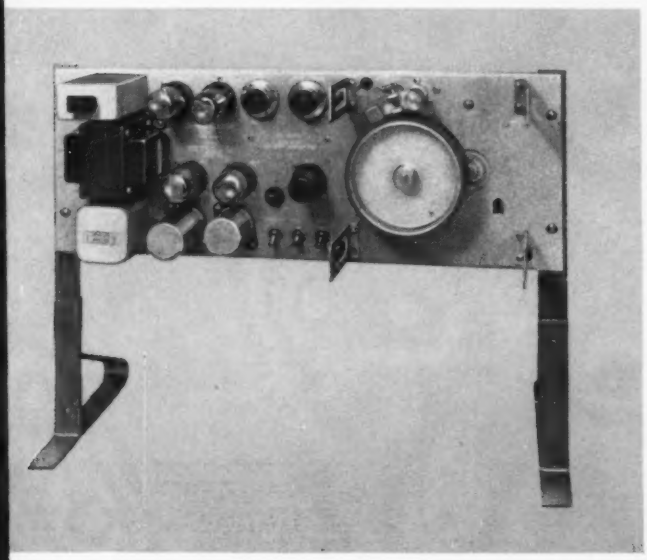
TYPE VMC gives any message up to four minutes long: weather forecasts, paid commercials, public service messages or a combination of any of these. Anyone can record the announcement from anywhere (even from another city by remote control). Old message erased and a new one recorded in one step.

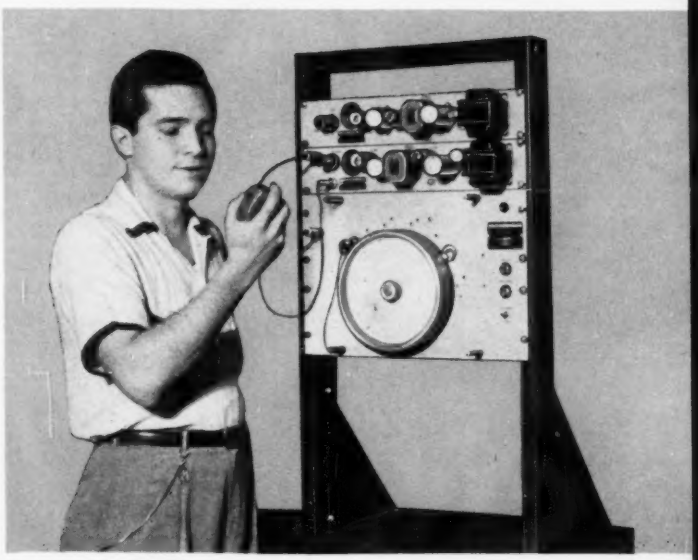
TYPE FML is designed to give a single message (either 6½ or 12 seconds long). Telephone companies use this machine to inform volunteer firemen of the location of a fire. You might also find it useful for announcing theater and train schedules. And, there are a dozen other uses for this Recorder-Announcer.



TYPE VMC (at right). Remote Control Unit for the VMC Recorder-Announcer (below).







TYPE SCC This compact, low-cost announcer gives any message, 12 seconds long. Ideal for intercept service when only one announcement is needed (or, you can profitably use two SCC machines for two different messages). Can also be used for giving commercial announcements.

TYPE MCF is used for repetitive services such as interception of calls to disconnected lines, dead levels, etc. Provides up to five separate messages. Initially, you buy equipment for only the number of channels you need. Other channels can be added at any time.

AUTOMATIC ELECTRIC

GENERAL SYSTEM

Subsidiary of

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WHEN YOU HAVE A MINUTE TO SPARE...
OR WHEN YOU CAN'T SPARE A MINUTE

there's nothing like a handy extension phone!

You'll be seeing this happy housewife in many national magazines this month and next.

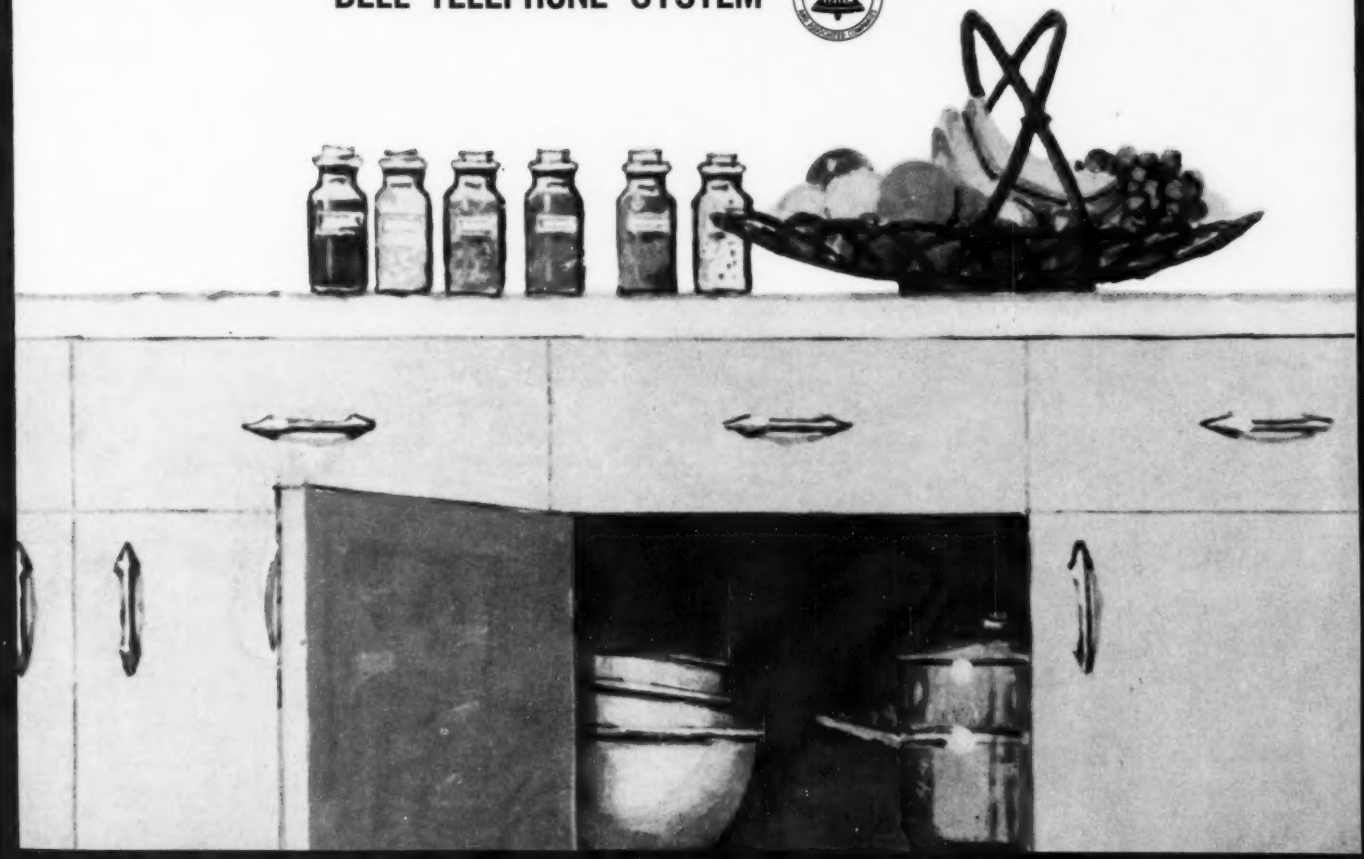
So, we trust, will millions of readers throughout the country.

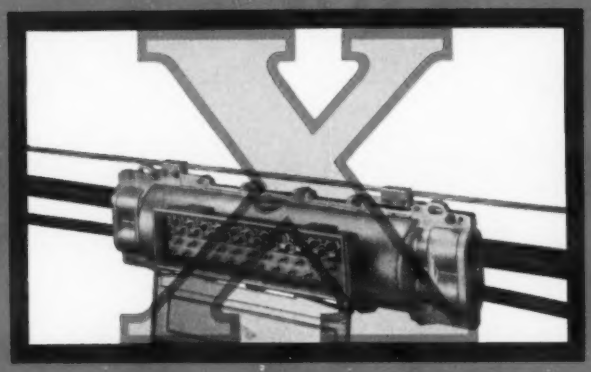
She's appearing in a full-color Bell System advertisement for extension phones where they're needed in today's homes . . . where the family works, plays and sleeps.

"Doesn't it make sense," we ask, "to put phones where *you* are—instead of running to reach them?"

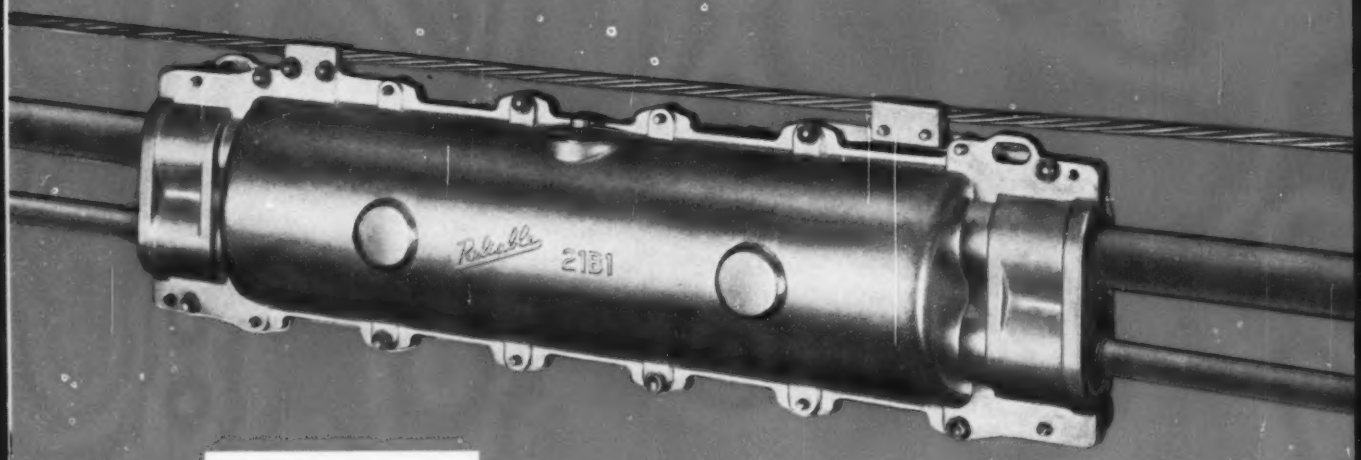
We think this will make sense to lots of people, and help the sales efforts of *all* of America's telephone companies.

BELL TELEPHONE SYSTEM





Now...
"X" branch splice cases



No. 17 ratchet wrench

Designed specifically for splice cases and splice case terminals. Handle length (3¾") limits the torque that can be applied to clamping bolts. Strongly recommended for use on all splice case installations.

Branch outlets on both ends

Type "X" splice cases and terminals are here, making a total of forty-two different catalog numbers in the line of Reliable splice cases and splice case terminals. Now you can straight splice, "Y" splice and "X" splice. The new type offers all the advantages of the standard models plus branch outlets on both ends of the case.

Both Protected and Unprotected "X" type splice case terminals are available for 6, 11 and 16 pair—or, two units can be used together for 12, 17, 22, 27 and 32 pair terminals. Cable size — 1" to 1.6" O.D., with Adapter available for .3" to 1".

Installation Specification No. 104 describes installation procedures for splice cases and splice case terminals. Send for yours today.

Reliable
ELECTRIC COMPANY
Franklin Park, Illinois

A Symbol of Integrity Since 1909

Congress and Its Commitments

WHEN we reviewed the President's budget message, which called for continuation of the federal war-time excise tax on local telephone service during the fiscal year 1961, we wondered if the time would ever come when the federal budget-makers would recognize and respect the will of Congress.

Here is a tax that Congress deemed unfair and discriminatory and voted to repeal on June 30, 1960, after receiving letters and requests demanding its repeal from many thousands of telephone subscribers and users, as well as from such organizations as labor unions, state regulatory commissions, the government's own REA, chambers of commerce, etc.

But now, come the budget-makers requesting that Congress break its word, so to speak, and continue the local telephone tax.

Of course, this is not the first nor only time the budgeteers have failed to respect the will and desires of the legislature and to recognize the public's growing opposition to discriminatory excises. On many occasions, especially during the past two decades, Congress has yielded to similar executive department recommendations and has rescinded excise tax cuts or repeals which it previously had passed. It seems to have gotten into a deep rut in this respect.

We think (and we have a lot of company) it's about time for Congress to start rejecting the budget-makers' requests that it renege on its word and promises to the American people. After all, congressmen are the direct representatives of the people and the ones who have the final control of the government's purse strings—not the executive branch.

The telephone excise tax is a good starting point for congressmen to reassert their authority and responsibility and to make good their promises of excise tax reductions and repeals. Their action, last year, to eliminate the telephone excise tax was in response to a swelling demand, over the years, from their constituents that it be repealed. They should carry through on this commitment by rejecting the executive's request that the repeal of the tax on June 30 be postponed.

Telephone subscribers and users, who constitute a majority of the American people, are fed up with this emergency war-time tax on an essential service and they want it taken off. But, in view of Congress' ofttimes willy-nilly habit of yielding to pressure from the executive branch, we recommend that public pressure again be brought to bear on the law-makers to keep their commitment to eliminate the telephone excise tax on June 30.

We believe it is essential that all telephone industry people and telephone subscribers and users, as well as telephone employe unions, state commissions, REA, and local civic organizations, again (and now) write their senators and representatives requesting that they stand by their decision to let the telephone tax expire on June 30 as scheduled.

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

President requests cut in REA loan funds and an increase in 2 per cent interest rate in annual Budget Message. Recommends continuation of 10 per cent excise tax on local telephone service, scheduled to expire on June 30. . . . State governments consider placing excise tax on intrastate service.

PRESIDENT Eisenhower's Budget Message reveals a determination to keep the nation's 1961 (fiscal) budget in balance. Furthermore, the President expects that with the addition of certain new sources of revenue (which are highly debatable, such as the hike in gasoline and postage), a budget surplus available for retirement of debt would be recorded in the amount of 4.2 billion dollars.

Among the individual budget items, telephone industry readers will be interested in the recommendations for REA loans. Ostensibly Ike's request of 81 million dollars for new lending authority for telephone loans represents a cut of 24 million dollars over last year. But with the intrusion of such vague and imponderable factors as "carryovers" (unexpended balances from last year) and contingency funds (which are only charged as debt obligations when actually spent on approval of the Secretary of Agriculture), budget comparisons can become a difficult and unsatisfying thing.

And when you further stop to consider that whatever Ike requests of Congress in his budget, Congress is likely to raise the ante; perhaps it is less trouble to let the whole thing go until the House Appropriations Committee reports on the subject. There will be still further changes, no doubt, as the bill proceeds to a vote on the House floor and through the Senate.

For what it is worth, here are the over-all figures of REA funds, including both rural electrification and rural telephone as contained in the Budget Message: Actually spent in 1959, 315 million dollars; estimated to be spent in 1960, 334 million dollars; and estimated to be spent in 1961, 355 million dollars. On top of this, the Budget Message shows that only 200 million dollars will be recommended in new obligation authority for fiscal 1961.

Of one thing we can be sure, that is that REA will not go shy of funds for either rural electrification or rural telephone. Strictly on the basis of new lending authority recommended for new telephone loans—81 million dollars—the figure is 2 million dollars higher than the new authority granted by Congress last year for the fiscal year 1960, in which we are still operating.

Restrictions on REA Financing?

On the subject of REA, President Eisenhower indicated that he will again fight for restrictions on the 2 per cent interest rate and the high level of borrowings which have been building up throughout his administration. The President stated on this:

"The Rural Electrification Administration currently finances the capital needs of the cooperatives by borrowing from the Treasury at the statutory interest rate of 2 per cent and relending at the same rate.

"Legislation is proposed under which REA would (a) borrow from the Treasury at not to exceed the average rate of interest payable by the Treasury on recently issued long-term marketable obligations, and (b) make future electric and telephone loans at the same rate plus one-fifth of 1 per cent to cover administrative expenses and estimated losses.

"Legislation now before the Congress to place the operations of this agency on a revolving fund basis should also be enacted.

"It is vital, looking ahead, that legislation be developed to enable telephone as well as electric borrowers to obtain funds from a mutually owned financing institution to meet the needs for the future growth of these borrowers. Under this longer range plan, loans would also be available from the Rural Electrification Administration to meet special circumstances.

"The Secretary of Agriculture will work with REA cooperatives and other interested parties in developing such a proposal."

As a practical political matter, there is not much chance that President Eisenhower will get his own way on either of these two restrictive requests; namely, boosting the interest rates or steering REA borrowers towards other sources of financing.

One other detail in the President's message about REA is worthy of note. That is that the Eisenhower administration is evidently reconciled to the fact that REA loans will go on indefinitely for rural electrification, even though virtually every farm in the United States, which can be connected with central station service, as a practical matter, has now been connected. The President's message stated on this:

"*Rural Electrification and Telephones.* About 96 per cent of our farms now have central station electric service, as compared with 11 per cent in 1935.

"The expanding use of power in the areas served by electric cooperatives financed by the Rural Electrification Administration continues to require substantial amounts of new capital every year to provide additional generating capacity and heavier transmission and distribution facilities.

"More than one-half of the total power sales by the REA system are made to rural industrial, recreational, and other non-farm customers. These non-farm users now comprise over 80

per cent of the new customers being added."

In other words, the fact that these rural electrification loans are now going chiefly to serve rural residents, rather than dirt farmers, and to finance generating and transmission facilities (for cooperatives) rather than farm electric distribution lines, is now admitted and accepted. The primary purpose of REA—to bring power to the farms—has now been accomplished, and REA is moving into other areas of operation for rural service. On one basis or another, it is here to stay.

In the rural telephone field, of course, there is still plenty of room for REA and the telephone companies to expand rural service to both farms and rural residences. But when the day comes when every farm has a telephone, do not expect REA's telephone program to dry up and blow away. Those things simply do not happen in the field of political operations. It is a phenomenon controlled by Parkinson's Law or something like that.

States Jumping the Gun on Excise Tax Shift?

If President Eisenhower's Budget Message does nothing else, it should help to slow down state governors and legislatures greedily moving in to take over collection of federal excise taxes on monthly telephone bills, even before the federal government has given them up. If Congress pays any attention to the budget request, and it may do so—this year, anyhow—it will take affirmative action to continue the present 10 per cent federal excise tax on local telephone service (See editorial on page 17). This would be done in order to maintain the level of federal revenues needed to balance the budget, and produce Ike's anxiously awaited surplus of $4.2 billion for fiscal 1961. Here is what Ike said on this in his Budget Message:

"Extension of Present Tax Rates. In order to maintain federal revenues, it is necessary that the present tax rates on corporation profits and certain excises be extended for another year beyond their scheduled expiration date of June 30, 1960.

"The scheduled reductions in the excise tax rates on transportation of persons and the scheduled repeal of the tax on local telephone service, which were enacted in the last session of the Congress, should be similarly postponed."

If Congress does as the President asks, there will be no "tax savings" on telephone bills which the state legislatures could take over. But will that stop them?

This writer foresaw, nearly a year ago in this department, when the "shift" of excise tax collection of monthly bills from the federal to state governments was being discussed, that some hard-pressed states would be tempted to eat up these revenues even before they were available. And sure enough that is just what has happened.

Out in Michigan, that land of tax deficits for the state government, a legislative levy of 3 per cent has already been placed on intrastate telephone business. And, since then, Governor Furculo of Massachusetts has asked that his state legislature enact a 10

REA Authorizes $2,804,000 in Loans

Telephone loans approved by the Rural Electrification Administration during the three weeks beginning Dec. 28 will result in new or improved service for 2,602 subscribers. About 85 per cent of these subscribers will receive initial service.

The loans, totaling $2,804,000, were approved to borrowers as follows:

LaCrosse (Wash.) Telephone Co.; $354,000; Dec. 29.

The new borrower now furnishes magneto and common battery service to 355 subscribers. It plans to convert its system to dial operation in order to improve service for these subscribers and for 32 subscribers of the nearby Winona Telephone Co. The Winona company proposes to abandon its lines and to take service from the borrower as soon as it is available. The borrower also will furnish initial service for 54 subscribers.

New construction planned by the borrower includes a combined headquarters and dial central office at LaCrosse.

E. A. Burgess is president of the LaCrosse company.

•

North Florida Telephone Co., Live Oak; $1,961,000; Jan. 15.

The major portion of these funds—over 1 million dollars—will be used by the borrower to help provide telephone service to a new Federal Aviation Agency installation in the Hilliard exchange area. In addition to new line, facilities required to furnish this service include a private automatic exchange, a 300 switching system and on-site and inter-exchange equipment.

The remainder of the loan will enable the North Florida company to furnish initial service to 1,214 subscribers in 10 of its exchange areas. To provide this additional service, the borrower plans to create a new exchange and construct a new building at Citra, and install new dial facilities in the existing Luraville exchange.

REA loans to this borrower now total $9,203,000 which will aid in enabling it to furnish new and improved service to 12,097 subscribers. The system, when complete, will consist of 23 exchanges. Approximately 7,580 subscribers are now receiving dial service through 22 of the exchanges.

Otto Wettstein, III, is president and manager of the North Florida company.

•

Adams Telephone Cooperative, Camp Point, Ill.; $114,000; Jan. 15.

This will aid in providing initial service to 349 subscribers.

REA loans to this borrower now total $1,161,000 which will help to furnish new and improved service to 2,648 subscribers. The system, when complete, will consist of eight exchanges of which seven now provide dial service to about 1,500 subscribers.

LeRoy Grimes is president and Dean Searls is manager of the Adams cooperative.

•

Adamsville (Tenn.) Telephone Co.; $375,000; Jan. 15.

This loan will aid in financing initial telephone service for 598 subscribers, and in completing the authorized system.

REA loans to the Adamsville company now total $907,000 and will make possible new and improved service for 1,582 subscribers. The completed system will consist of four dial exchanges which are in operation and furnishing service to approximately 970 subscribers.

Cecil D. Dickey is both president and manager of the Adamsville company.

per cent state tax on telephone service. In his message to the Massachusetts Legislature Governor Furculo pointed out that Congress has voted to terminate the federal levy on local telephone service next July 1. He estimated that the Bay State could pick up a tidy little sum of 20 million dollars by socking the 10 per cent state excise on all intrastate telephone business. There are rumors that Governor Rockefeller of New York has his eye on the same prize package.

Massachusetts telephone companies naturally hastened to assure their governor that he was counting tax revenue chickens before they were hatched. It was generally expected by many observers (including yours truly) that the federal administration would ask Congress to give the present federal excise tax on monthly bills at least one more "go around" (in the interest of election year budget balancing). And that is exactly what the President has done.

But where does this leave telephone companies, caught between Uncle Sam, who does not want to let go of the tax — not right away, anyhow — and the states who are grasping for it? Well, it leaves them in the middle — that's where it leaves them. And unless they are both lucky and careful they can end up by having their subscribers pay the same tax twice—to both tax collectors, federal and state.

Vice President Thomas M. Hennessey of New England Telephone & Telegraph Co. brings the whole situation into clearer perspective when he recalls that Congress, last spring, voted to end the federal excise tax on monthly bills as of next July 1, on the basis that it was a temporary war emergency and that its continuous collection was a discrimination against telephone subscribers and users. This is quite a different reason for ending the tax than the political explanation that Congress wanted the telephone tax kept in operation, merely shifting the collection from federal to state governments.

Over the long-range, probably the only way the telephone industry is going to defeat this political grab-bag approach is to appeal to what might be called a "telephone vote." Right now there is no such thing as a "telephone vote"—that is to say people do not vote this way or that way on the basis of whether they are telephone subscribers or use the telephone service a great deal. But if sufficient persuasive appeal were made to the telephone subscriber, *as such*, that it is *his* money, out of *his* pocketbook, which the politicians are bandying about between Washington and the state capitals, then a "telephone vote" could very quickly develop on this subject. And there is nothing which would have a swifter or more decisive impact on the political attitude, regardless of party politics, than such a development.

A good example of this was seen in the recent action of Mayor Wagner of New York in seeking the repeal of a 10-cent (per ride) city tax on taxicab users. Here is what the New York *Times* said about this repeal of a tax which was Mayor Wagner's own idea in the first place, but which he could not get rid of fast enough, once he became aware that a "taxicab vote" was developing as a result:

"Repeal of the taxi tax, to become effective July 1, was attributed officially to the drivers' loss of earnings, from a reported falling off in riding and tips. Our own guess is that the motive was, at least in part, to tempt taxicab drivers to quit talking about Mayor Wagner to their passengers.

"Traditionally loquacious, never loath to talk politics, the drivers had been giving Mr. Wagner a rough ride for months, to any passenger, regardless of party or destination. The taxicab tax had turned them into Republicans, fusionists or rebel independents overnight.

"The 'new' Wagner may win some immediate converts in other walks of life, but it will take a little longer to recapture the taxicab vote."

The telephone industry might well take a lesson from the short but unlamented fate of the New York City taxicab tax. This doomed tax still has the city politicians writhing in agony, every time they hear one or more of the insulting and ribald versions of "Brother, can you spare a dime?" which quickly developed in popular parody form. Can anybody think up some parodies on "All alone by the telephone?"

The Montana Rate Case

The recent decision of the Montana Public Service Commission in the Mountain States Telephone & Telegraph Co. rate case contains some very interesting comment about factors which ought to be considered in determining a fair and reasonable rate of return. The commission granted Mountain States a $1,125,939 rate increase, and allowed a 5.79 per cent return based on a year-end (Dec. 31, 1959) present fair value rate base of 57.8 million dollars.

In these days of heavy accent on cost of money as being almost the primary, if not exclusive factor, in setting up the return allowance, the viewpoint of the Montana commission majority is a very thoughtful one. The majority opinion (one commissioner dissenting) stated that there are three tests—not just one—for the return allowance:

"(1) A return to be fair must permit the utility to attract capital on reasonable terms; (2) it must permit the utility to maintain its credit and financial integrity, and (3) it must allow earnings which are reasonably comparable to earnings experienced by other businesses in other industries with a similar degree of risk."

The commission does embrace the so-called hypothetical debt-to-equity ratio device which quite a few state commissions use in Bell System rate cases these days. The hypothetical ratio is the one which the commission thinks a company should use (if it wanted to save money by financing with more bonds and less stock than the ratio actually used).

Using such a ratio of 45 per cent debt to 55 per cent equity, the Montana commission found that the over-all cost of capital to Mountain States was 5.72 per cent. But note well that the commission did not let this alone determine the return allowance. It stated that "current expansion in Montana requires a greater rate of return than the amount necessary to pay its costs of capital alone." Therefore, the commission decided on an over-all return allowance of 5.79 per cent. Since this percentage is applied to present fair value, it represents quite a bit more than if it were based on original cost less depreciation or net investment rate base.

One other comment in the majority opinion, that dealing with the justification for using year-end rather than year-average or period-average figures for the rate base, is worth marking. The majority opinion stated on this:

"A projection into a reasonable future period, and the use of year-end results is more applicable to future rates, and representative of a future period than the use of the average results over a period concluded long before the issuance of any order."

The majority opinion did have some restrictive provisions with respect to the company's argument. It rejected any rate base allowance for claimed "Plant Under Construction" and "Property Held for Future Use," and also for "Working Capital."

Hands Behind Helm

"In a struggle where freedom is the issue, government cannot carry all of the responsibility. Governments of the free can do much, and we do not shirk our task. But the best exponents of freedom are free people. Our pride is not in what government does, but in what government does not do."—JOHN FOSTER DULLES.

The New Look—

All Number Calling (ANC)

All-numeral telephone numbers will provide additional central office codes for expansion of DDD. Size of company and time of change-over no obstacle.

By L. L. RUGGLES*

A NUMBERING system capable of providing a unique directory number for each telephone customer connected to the dialing network of a continent is a modern necessity.

The planners who envisioned the national dialing network saw the need and provided a solution which appeared adequate for some time. The explosive rate of growth of the practice of customer dialing has made the long-range view of a few years ago appear to be a short-look.

The plan to divide the U. S. and Canada into geographical areas included provision for some 152 areas, each of which would accommodate about 500 central offices.

Outgrowth of Tradition

The limitation of 152 areas was due to the numbering system adopted. Three numerals with the middle digit "1" or "0" and the first digit from "2" to "9" are the main factors for the limitation.

Office codes consisting of 2 letters and a single numeral are the outgrowth of the office name tradition established in the days of manual switching. It was a logical plan to name a central office with some regard to the geographical area in which the office was established. It was also an easy way to differentiate one office from another in a multi-office system and to keep to a minimum the number of digits for a customer to remember, and pass to an operator who could quickly trunk the call to its destination, aided by suitable trunk group markings in the switchboard multiple.

Then came the dial system which posed some problems of interworking with manual systems. The office name stuck and the dial, originally made with only numeral designations, was modified to include the letters.

*Mr. Ruggles recently retired as Chief Engineer of Automatic Electric Co. He subsequently became Chief Engineer of the Wirecom Division of Cook Electric Co. For several years, he served as director of the Sub-committee on Direct Distance Dialing of the Engineering Committee of the United States Independent Telephone Association.

L. L. RUGGLES

Presents Handicaps

The proponents of the office name won the debate of names *vs.* numbers, so for many years we have lived with the advantages of a name system which now turns out to present handicaps. Why handicaps? Well, who could tell that in 1960 there would be more than 76 million telephones in the U. S. and Canada and that it would be difficult to find enough names to accommodate all the offices necessary to efficiently switch connections locally or internationally?

It has been found that even with a rather carefully screened list of names there are many dialing errors by customers who do not spell properly, or who misdial for other reasons, such as dialing a letter "O" for a zero, a "one" for the letter "I," etc.

There are names even in the approved list which are frequently misspelled or misunderstood. For example, Lynwood could be mistaken for Linwood, and even such a common name as Garden can be taken for Gordon.

A case which appears absurd is the dialing of YO for Wyoming, but it happens. MU is frequently dialed for Mercury and, conversely, ME for Murdock.

Some communities take violent exception to office names which, to them, have objectionable geographic or commercial connotations. These are some of the reasons why only 500 names, or possibly less, are considered even rea-

sonably satisfactory and, therefore, why it has become necessary to subdivide the originally planned areas as more offices were required.

Need More Area Codes

Sooner than expected, therefore, it appears that 152 areas may not be sufficient and some way must be found to allow for more office codes in each area or modify the area codes. An estimate made by the Bell System, after a look at the future, reveals the possible need for a minimum of 169 area codes and a maximum of 372 codes in the year 2000.

A solution which appears to have merit is the plan to adopt directory numbers consisting of seven numerals in place of the 2-letter, 5-numeral (2L-5N) system now widely used. This numbering plan would increase the number of usable office codes to nearly 800. It is estimated that, with this arrangement, some present areas may never require subdivision, and others not for a long time.

Trial installations have shown that dialing errors are less frequent where the directory numbers consist of 7 numerals. It appears that it is easier to count than spell and that it takes less time to find numbers than to look over the dial for the right letters, especially if the alphabet is not too well fixed in mind.

Directory Costs Lowered

Within recent months nearly all small directories and several large city directories have been listing numbers with only 2 letters and 5 numerals, for example, MO 5-1234, instead of MOntrose 5-1234. This has reduced the size of directories and lowered cost of printing, as well as improving the appearance and ease of reference. In some cases, an extra column in each directory page was added.

Many business houses use the same listing in their advertising so if the name were not known, it could not be given to an operator. It is noticeable that, frequently in the past few months, operators are using the first two letters instead of the name when passing a call to another operator. Information operators in most cities are now only using two letters instead of the name when giving out numbers to customers.

Less Changes in Dialing Habits

There seem to be a number of good reasons for adopting All-Number Calling (ANC), as it is now designated in the Bell System. It will not be a crash program, but will be an objective to be attained on a convenient basis.

The adoption of the 7-numeral plan will ultimately save some major changes in dialing habits. For example, if it should become necessary to subdivide an area, many toll calls now completed by dialing 7 digits would require a 10-digit number because of the necessity of dialing an area code for calls outside the home area. Seven numeral directory numbers may eliminate the necessity of an area subdivision.

It is desirable and economical to complete as many calls as possible by dialing a minimum number of digits.

When international toll dialing becomes possible it will be necessary to use only numerals for some foreign stations, due to the difference in the lettering of dials. For example, the British Post Office dial omits some of the letters included in the U. S. dial and places the letter "O" in the zero position.

The practice of assigning PABX stations a regular 7-digit directory number is growing by reason of the demand for inward dialing to PABX stations, and for outward toll dialing from such stations. This practice will use up central office numbers very rapidly and thus require more office codes. Under the present system of 2-letter, 5-numeral numbering, the need for more area codes would soon become urgent. Seven numeral numbering can delay, if not forestall, the need for more areas.

Savings in Billing

For some telephone companies, there will be some savings in the accounting and billing process. Where the bills for customer dialed calls now show the letters designating an office code, it will no longer be necessary to translate the numerical digits of the office code into letters in the billing process. It would relieve pressure which may now exist for showing office names on bills. If the ANC plan appears reasonable to any who may be contemplating a conversion to dial or a general number change for other reasons, it may be worthwhile to consider these suggestions.

A change from a 4, 5, or 6-digit system to a 7-numeral system seems desirable any time it becomes economical to equip an office for toll dialing (inward or outward).

An existing 2L-5N system can be changed gradually by assigning all new connected stations a 7-numeral number. This will make a mixed 2L-5N and 7-numeral system for a while, but it should not present any problem. Any new office established can be assigned 7-numeral numbers, even though it may be in a multi-office network.

At the time when all numbering is on the basis of 7 numerals, lettered dials on telephones will not be required. Until that time, lettered dials will be necessary wherever Direct Distance Dialing (DDD) is practiced.

Advantages Summarized

The advantages of all-numeral directory numbers may be briefly summarized as follows:

(1) More office codes will be available in each area thus preserving for some time the distinctive area code designation $\frac{1}{x}0x$. This is an advantage to the present users of automatic toll ticketing equipment because a change in the area code structure, which would require anything but a "1" or a "0" as the middle digit, would require modification of the ticketing equipment.

(2) Seven numeral numbers result in less dialing errors. The spelling problem is eliminated.

(3) The problem of choosing appropriate office names is eliminated.

(4) Directory printing costs can be reduced.

(5) More DDD calls will be completed with a minimum of dialed digits.

(6) Seven-numeral numbering will be compatible with the future requirements of international dialing.

(7) It will eliminate the demand for office names to be printed on customers' bills.

(8) The change can be made on a gradual basis without incurring unusual expense.

We can see no real disadvantage in the use of seven-numeral directory numbers. We do see plenty of advantages.

There may be some nostalgic feelings about office names, but progress often means a break with tradition and progress should not be retarded.

Three Independents Adopt ANC

TELEPHONY recently has received reports from three Independent telephone companies which have adopted, or will adopt, the All Number Calling plan in connection with conversions to dial operation. They are:

Public Service Telephone Co. of Montrose, Mich. adopted the system Jan. 17 when it converted its Montrose and New Lothrop exchanges (TELEPHONY, Jan. 23).

The General Telephone Co. of the Southwest has announced that it will change to the all numeral numbering system when it converts its Wellington (Tex.) exchange to dial in February.

The Mongollon Mountains Telephone Co. of Silver City, N. M., will adopt ANC when it converts to dial on Apr. 24.

EDITORS NOTE: A successor to the late Harold B. McKay, TELEPHONY's Electronics Editor, will take over this column in the Feb. 27 issue, at which time the appointment will be announced. This issue of our Electronics Section is devoted to a recent address by Maj. Gen. Earle R. Cook, Deputy Chief Signal Officer, Department of the Army, before the South Texas Chapter of the Armed Forces Communication and Electronics Association in San Antonio, in which he discussed space communication.

THE NEW COMMUNICATIONS ENVIRONMENT OF SPACE

by MAJ. GEN. EARLE R. COOK

MAN HAS always tried to reach beyond the horizon—both figuratively and literally. In communications, he has especially sought to overcome the earth's physical limits.

The Indian signaled with blankets and smoke to tribesmen beyond the natural curving barrier of the ground. He rode his pony atop high places where he could be seen—zigzagging, circling, dismounting and mounting. Each movement communicated information.

Founded Signal Corps

A young military surgeon became intrigued with the principle of the deaf and dumb sign language and developed a visual flag signaling system for communication. Using towers and high natural vantage points, his early signalmen during the Civil War waved flags in accordance with his code to convey intelligence and orders.

His later "Flying Telegraph" trains were designed to further overcome the distance and geographical barriers to communication.

This officer—Maj. A. J. Myer—focused a specialized effort on military signaling. He founded the U. S. Army Signal Corps and became its first Chief Signal Officer and director of the first full-time signaling organization for a national army.

That embryonic Signal Corps becomes 100 years old this year.

Yet even in Myer's imaginative vision, he probably could not foresee the wholesale changes which were to occur in communications during this subsequent century of his corps' service. Even he could not guess the hurtling progress man's ingenuity would devise.

An evolution of almost revolutionary character took place in the last 50 years of the 19th century. *In less than one man's lifetime*, a group of inventive pioneers world-wide—Morse, Nipkow, Marconi, Baudot, Bell, and Zworykin—produced the practical means for telegraph, telephone, teletypewriter, radio and today's television.

Now, in the last half of the *20th century*, we are embarked on another tremendous program of exploration, discovery and exploitation in the vast new region of outer space. Man looks into an infinity of potential as limitless as space itself.

Missile developments of the Defense Department have provided us the essential components for a new means of transportation—space vehicles. Of telling importance to the communicator, some of these equipment and technique developments will serve us well for communications to and from outer space. And they will also help us to solve some of the vexing problems of communicating between widely separated points on earth.

Face Many Challenges

That we are only at the threshold of this promising new world—or maybe, promising *outer* world—can be seen in the relative newness of space vehicles and satellites themselves.

Today, we face opportunities and problems as challenging as those faced by earlier men and women a few generations ago. There is again the need for improved communications—compounded by the compelling advances in space work. There is a desperate need for more adequate, more reliable, global communications. Not only for the military, but for the manifold number of civilian applications: Communicating between countries, radio and television world-wide news and entertainment broadcasts, storm and disaster warning networks, and ultimately, space navigational, intracommunication and control systems.

Aside from man's eternal inclination to improve himself and his communications, what makes us look toward the day when we can have a system of communicating satellites stationed in space around the earth?

Are today's communications so woefully short of man's requirements?

I don't believe the answer can be a categorical yes or no. Just as the colored signal flags gave way to the telegraph, and the telegraph to radio relay, it is more that our times today demand comparable advances.

Global Communications

There's nothing fundamentally wrong with the commercial communications systems within the United States, or within some of the western European countries. The same can be said of the military systems of the services, which are supported by civilian communication facilities. There are some who feel that domestic or interior communications advances have actually moved faster than man's ability to assimilate them.

But the situation isn't the same for trans-Atlantic or trans-Pacific communications. We have serious problems with cable and radio facilities when it comes to long distance global communications—particularly in the polar regions.

Our existing systems are overburdened with traffic. They lack solid reliability, because of atmospheric conditions and other factors. And they're not versatile or very flexible.

One example is the global transmission of video signals. There is no commercially feasible trans-Atlantic or trans-Pacific television service.

For long-range voice and coded transmission, of course, we have excellent marine cables. They lie across the bottoms of the oceans and connect us with other continents. And we have radio techniques using what is called tropospheric or ionospheric scatter and other advanced systems. In the former we essentially use the tropospheric or ionospheric layers above the earth as a kind of reflector, and bounce our signals back to earth at some distant point.

But all of these are overshadowed by the tremendous possibilities of satellites — orbiting earth satellites —for the relay of audio and video communications. In its simplest form, the satellite replaces the natural space layers from which we bounce our signals in the conventional systems. And we can put inside the satellite special communications equipment which will amplify the signal or store it before relaying it back to the earth receiving station or another satellite.

Signals Off Moon in 1946

We knew as early as the end of World War II that it was feasible to transmit signals through outer space. The large experimental DIANA radar at Fort Monmouth, N. J., successfully bounced signals off the face of the moon in 1946 and received them at the ground site.

Communicating satellites will probably never replace all the various existing systems of communications. But satellites will ultimately provide a reliable and efficient means of spanning the oceans and polar regions, of providing truly global communications—for both military and commercial purposes.

I'd like to tell you about some of the programs and projects of the Defense Department for communications satellites in outer space. Many of these had their origin four, five, even as much as 10 years ago. But, until recently, they proceeded at a moderate pace.

In the years after Korea and before the Sputniks, our national security was based mainly on a policy of massive retaliation—with a balanced budget. There was no real urgency of scientific military effort in the realm of outer space. Economy and nuclear weapons were the watchwords of our military strategy.

But the sudden and positive appearance of Soviet satellites brought sharp reactions and abrupt changes in our scientific philosophy.

The potential of our space activities was recognized, and our scientific work in this field proceeded with greater vigor. The SAC dispersal program was expedited. The ATLAS program was undertaken. The Navy stepped up work to provide an operational POLARIS missile. The Army developed the REDSTONE and JUPITER missiles. And, in the field of communications satellites, we extended our plans and accelerated the development of our first hardware.

Took Shape Year Ago

The first military experiment in space communications began to take shape a little over a year ago. It was called Project SCORE—the initials standing for: Signal Communications by Orbiting Relay Equipment. And it was a development of the Army Signal Corps Research and Development Laboratory—under the jurisdiction of ARPA, the Advanced Research Projects Agency of the Defense Department.

The Army-developed communications "package" was aboard a satellite placed in orbit by an Air Force ATLAS missile on Dec. 18, 1958. . . .

This experiment—Project SCORE — demonstrated for the first time that voice, teletypewriter, and even ***multiple*** teletypewriter signals could be received, stored, and then retransmitted by a satellite orbiting in space. The communications satellite was used successfully as both a delayed repeater — where the signals are temporarily stored and sent

down later—and as a real-time relay station, where the signals are relayed directly to another ground station as they are received.

This marks the first chapter of exploration and discovery in an entirely new dimension of modern communications.

But it's only the beginning.

Our space work continues on several different technical fronts—and at a relatively fast pace, considering the unique problems that confront us.

Chief among these problems is propagation, the transmission of electro-magnetic waves — the act of making our signals move through the air or space.

Signals Go Great Distances

Signals to and from space relay stations travel greater distances than many of us realize—beset by atmospheric interference, cosmic influence, fading, distortion, and other effects. On occasion, these kilomegacycle waves display tantalizing and unpredictable behaviour.

We sometimes feel an urge to remind the *non*-technical public that the surprising thing about radio and video communication is *not* that it sometimes fails us, but that it even works at all!

Overcoming these many obstacles and solving these peculiar problems of propagation are often matters of good engineering design and development. Frequently, altogether new scientific areas must be explored in order to produce adequate types of communications satellites.

And this is what the Department of Defense is doing—through research, development, and operations by *all* of the military services in close cooperation with the communications-electronics industry.

The first communications satellite —Project SCORE—was the forerunner of several other types now being developed.

Project NOTUS

All of these are part of a notable program called Project NOTUS, which constitutes a *family* of several kinds of communications satellites. NOTUS is one of the few new words which is not a contracted form of anything. It is the Greek word for south wind.

First phase of the NOTUS Project is Task *COURIER*—to provide vitally needed expansion of trunking capacities for global communications by means of delayed-repeater satellites.

In this concept, an Army-developed communications satellite will initially be placed in a circular orbit at a relatively low altitude of about 650 miles minimum.

As it passes over a ground station, information is transmitted rapidly by that station to the satellite, where it is stored on magnetic tape. Later, when the satellite passes over or near the ground station to which the traffic is addressed, that ground station triggers the relay with a coded command signal—and the satellite broadcasts the traffic stored on its magnetic tape.

While a ground station is receiving messages from the satellite, the station may *also* be transmitting, on a different frequency, *other* traffic to be carried by the satellite to other ground stations.

Three-Year Launching

The trick, of course, is to transmit and receive all of this traffic at exceptionally high rates of speed during the short period that the satellite is passing over each ground station. Our system has a traffic-handling capacity equivalent to 20 teletypewriter channels each operating continuously at a rate of 100 words per minute.

During a three-year development period beginning in mid-1960, several COURIER satellites will be launched. Each communications "package" will be developed by the Army, which will also construct the ground control stations of the COURIER system—in Puerto Rico, Hawaii, and several other locations around the world.

Each satellite will be placed in orbit by Air Force two-stage boosters of improved design.

Another task of Project NOTUS is to provide a real-time or instantaneous satellite repeater for two-way communications in the polar regions. This is called task STEER, and is being developed by the Air Force.

A more advanced type of six-hour polar satellite is also under development by the Army, known as Task TACKLE. It will provide ground-to-air and ship-to-shore two-way communications, and will be launched in a polar orbit by an Air Force modified ATLAS missile.

Task DECREE is a real-time communications relay station aboard a satellite in a 24-hour equatorial orbit.

Operating at about 23,300 statute miles above the earth's surface, a DECREE satellite will travel at such a speed that the rotation of the earth will keep the space vehicle *in a fixed position* with respect to the earth. It will effectively "hover" over a given location along the equator.

At this great distance, a large portion of the earth is visible to the microwave transmissions of the satellite, which acts as a relay between

points on the earth separated by several thousand miles.

Many Voice Channels

The Army-developed communications "package" will provide a large number of voice channels plus a voice channel for aircraft communications. The DECREE satellite will be launched by an Air Force modified ATLAS.

A larger, heavier, and more sophisticated type of 24-hour equatorial communications satellite will provide a greater traffic-handling capacity. It will be launched by an Army SATURN.

Three or four of these equatorial satellites, properly placed in space, would be sufficient to literally "cover the world"—except for small polar areas.

Ultimately, the 24-hour equatorial ADVANCED DECREE satellites will constitute a complete global communications system, which will also include communications satellites in polar orbits.

This is truly an ambitious program, which will probably take from five to as many as 10 years to complete successfully.

But we are well on our way!

All communications satellites of Project NOTUS are, of course, *active* satellites—equipped with their own transmitters, receivers, control devices, solar power, and ancillary equipment.

Aluminized Balloon

There's *another* type of communications satellite—the *passive* satellite—without actual communications gear or equipment, moving at extremely high altitudes in outer space.

Simplest kind of passive satellite is a large aluminized balloon, about 100 feet in diameter, which can be launched from missiles. Sufficiently powerful microwave signals directed at such a balloon would be reflected back to earth—weakly, of course, but over a wide geographical area.

Ground stations within that area would be able to pick up the reflected signals, providing each station included sensitive tracking and receiving equipment with highly directional antennas.

One passive balloon launched in a relatively-low-altitude orbit would provide communication between two ground-based stations for only a portion of a day. But, if enough balloons were launched, instantaneous relay communications could be provided almost continually.

An alternative to launching large balloons would be to place objects of *other* shapes in orbit in such a way that they would reflect microwave signals back to earth.

While passive satellites are possibly of greatest immediate interest to broadcasters, active real-time communications satellites can also prove useful for low-power transfer of data and video information.

Although initially of considerable expense, the regular transmission of transcontinental video programs—and even trans*world* video programs—would soon absorb the cost of launching an active real-time communications satellite.

The magnitude of commercial possibilities of such a privately-owned satellite relay staggers the imagination of even those of us who daily work with outer-space devices.

While we, in the Armed Services of the Defense Department, are primarily interested in military space communications, it's significant that so many of our current projects have direct usefulness to the civilian economy, are immediately applicable to commercial communications.

This is only a fair exchange, because the successful completion of these space projects would not be possible without the outstanding cooperation and direct assistance of the communications-electronics industry.

Communications satellites, both military and commercial, are not certainties of the Space Age.

They are no longer dreams of technical visionaries and science-fiction enthusiasts.

The future has become the present.

Man's first missile firing did more than send a vehicle into space. It catapulted man, the communicator, far beyond his earthen horizon to the unbounded promise of a vast new era of communications.

BOOK REVIEWS

ENCYCLOPEDIA ON CATHODE-RAY OSCILLOSCOPES & THEIR USES, by Seymour D. Uslan; 1,356 pages; 8½ x 11; cloth binding; $21.95.

THE SECOND edition of this reference text on the cathode-ray oscilloscope presents world-wide known art on the application of this extremely valuable device in all areas of research.

The second edition is a greatly expanded version of the popular first edition. We do not know of any area of application of the CR oscilloscope which is not covered in this book. The authors have succeeded in serving the beginner as well as the experienced engineer. The book treats both the elementary and advanced concepts of the CR tube—the CR oscilloscope and its internal circuitry—as well as its myriad applications.

Special emphasis has been given to make the CR oscilloscope understandable to all who have occasion

to work with it. The explanations of the electrical organization of the device are very detailed, but not any less detailed than many of the chapters which are devoted to uses.

Such information was gathered from research organizations of all kinds, thus making the contents truly encyclopedic. Whatever phenomenon is translatable into an electrical impulse, it is a part of the contents. Technicians, junior engineers, design engineers, and others working in communication electronics, educators in technical schools and colleges, and many others too numerous to mention here, will find this book valuable.

Certain chapters are devoted to the portrayal of information which is not to be found anywhere else, as for example Chapter 22, which is devoted to square waveform testing of amplifiers wherein is correlated the response curve which will produce indicated changes in the shape of the output signal. The amplifier response curve responsible for the change in waveform as well as the resultant waveform is illustrated.

Another chapter is devoted to the resultant of various combinations of sine waveforms over a range of amplitudes and phase relationships of the component frequencies.

Another chapter is devoted to the specifications of representative oscilloscopes which are presently available and to the schematics of these devices.

A major part of a chapter is devoted to oscilloscope maintenance.

A separate chapter is devoted to transmitter applications.

A chapter of more than 120 pages (Chapter 19) is devoted to scientific and engineering applications other than radio, audio, television, and transmitters.

This book is available from TELEPHONY.

•

VACUUM TUBE CHARACTERISTICS, edited by A. Schure. 96 pages; $1.80.

THIS IS ONE of a series of educational books called the Electronic Technology Series. It deals with the theory and operation of vacuum tubes, starting with the theory of electron emission and covering everything from diodes to special purpose tubes.

Both mathematical and illustrated examples are used. Instruction is included in the use of load lines and the data relating to specific tube types. Orders for this book should be directed to TELEPHONY.

electronics training... the new way*

Almost everyone admits that the rapid growth of electronics has created problems for telephone men. The skills of yesterday are still important, but they must be augmented with a new skill . . . electronics.

How is your company solving this problem? Specialized resident programs can do the job, but they are expensive. Tuition costs, per diem allowances, transportation and salary for a minimum program can easily add up to $2,000 per man.

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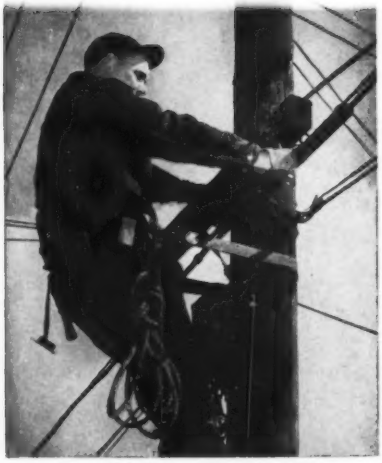


THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

ON THIS PAGE, in the Dec. 12, 1959 issue we asked our readers to furnish us with information pertaining to safety vests worn by telephone people while engaged in work on or along busy highways. We now have a letter from W. W. Joy, safety director of the General Telephone Co. of Michigan, in which he gives us some very good information on the subject.

A letter titled: "History of a Safety Suggestion," dated Dec. 10, from B. F. Robinson, chief engineer of the General of Michigan company, stated in part:

"The toll outside plant engineering group in the course of its engineering often finds it necessary to measure along the shoulders of trunkline highways. This results in a high exposure to accident conditions.

"Following a 'close call' with a fast moving car, plant engineer George Marshall made the suggestion that some means be used to warn oncoming cars of men working. Discussions followed with the general safety department. It was suggested that road signs be used, but this was rejected because too many motorists have a tendency to ignore signs. A better suggestion, we believed, was to have the engineers wear black and yellow checked 'flagmen's vests.' These vests show up well, are easy to slip on and off, and immediately signify caution to the motorists.

"Vests were purchased for the toll outside plant engineers; the engineers field-tested them; and in all instances the garb has proved satisfactory. Drivers slow down, give the engineers more room, and generally show caution. One driver even went so far as to roll down his window and ask, 'Where did you park your space ship?' This accomplishes our basic purpose—*Awareness by the driver.*"

•

The massive telephone network for the forthcoming Winter Olympics at Squaw Valley has been officially opened by the Pacific Telephone Co. and is officially in operation. The telephone number is OLympic 8-1960.

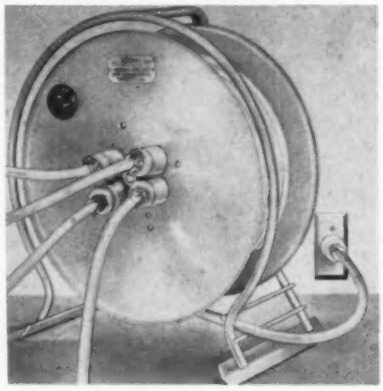
This telephone system has facilities equal to that required to serve a community of 37,000 population. The job included the installation of 100,000 feet of underground cable, 12 miles of it within a single square mile in the games area on the floor of the valley. A 60-line fire reporting telephone switchboard is provided. Provision has also been made for two telephone toll centers, one in the athletes' center and the other in a public trailer. Both of these centers will be staffed with multilingual telephone attendants to assist with domestic and foreign calls.

At least 80 other public telephones will be located in key spots about the valley. Extensive press, radio, television and other special facilities will also be installed.

•

Now that portable power tools are used extensively on numerous communication construction jobs, there is a need to distribute electric power safely to several different areas simultaneously by the use of extension cords. The best arrangement that we have noted to date to provide this service is a recently developed portable cord reel.

This low cost reel (see photo) features four multiple service "U"-blade type receptacles. This makes possible power outlets for various applications at one time from one power source. This reel is also designed to eliminate cord damage, as it prevents it from twisting, tangling or breaking. It has a cord capacity of up to 375 feet, depending on the cord size used. Other features include a heavy steel rod frame, balanced-load carrying handle, large rewind knob, and no collector rings, brushes or slip-rings to wear out.



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The post office department communicators in Australia are making good use of commercial plastic water pipe for telephone cable conduit. They have found this pipe to be light, easy to handle and it comes in long lengths. It is convenient to install, and being flexible, can be easily placed over or under obstructions.

It also has the advantage over iron pipe of not causing corrosion of lead cables, and it has a smooth inner surface that facilitates pulling in cables.

The Australians used plastic pipe in a novel manner recently on a submarine cable river crossing job. The following is quoted from the post office publication *On the Line:*

"In order to provide for the pulling in of spare cables, it was decided to lay 3½-inch polythene tubes in the same trench as the 13 heavy wire armored cables. These tubes, joined by a welded plastic collar, were filled with air to a pressure of 6 pounds per square inch. They were then tied to a cable by plastic cord and further weighted down with concrete blocks and chains. The two tubes and the last two cables were pulled into the trench in one operation."

The thirteen cables and the two plastic tubes were recently placed across the Cooks River at Sydney. The cables were placed in a trench 11 feet under the normal river bed so as to clear future dredging operations.

•

Crosstalk: Inflation is defined as when everybody is so rich that no one can afford anything.

Prejudice is a great time-saver. You can form opinions without having to get the facts.

pr public relations in the Telephone Business

. . . OTHER SPECIFIC ACTIVITIES

BY R. L. POST*

Part 5

THE GROUND-BREAKING ceremony is a simple yet effective public relations activity which should be held in connection with construction of a new building or a building addition. The principal event is the turning of the first spade of dirt by the mayor with the community's leading citizens witnessing.

Ground-breaking ceremonies may be held at any time of the day, depending upon the time which is convenient to the most people. Often the noon hour is best.

A typical guest list for a ground-breaking ceremony might include the mayor, councilmen, city attorney, officials of the chamber of commerce, newspapermen, radio station managers, and presidents of service clubs. If a larger crowd is desired, officials of other utilities, REA managers, and prominent women may be invited. The guests should be invited by letter.

A spade should be obtained prior to the ceremony. It is often a good idea to paint the spade silver or gold.

The actual ceremony should be short and fast-moving. It should open with the telephone company manager making brief introductory remarks about the purpose of the gathering. He will then introduce the mayor and official guests. Next, he will hand the spade to the mayor who will break the ground.

One of the big advantages of the ground-breaking ceremony is the fact that it affords publicity of the event. The ground-breaking is newsworthy and is usually deserving of pictures. Radio stations will sometimes broadcast the ceremony.

Although the ground-breaking ceremony is rather simple, its success will, nevertheless, depend upon its being well planned.

An opportunity to reap some good public relations for the telephone company occurs whenever the company reaches a milestone in number of telephones served in a community. A milestone ceremony might be held when the 500th, 1,000th, 2,000th, 3,000th, 4,000th, 5,000th, and 10,000th telephone is reached.

Telephone Milestone

When such a milestone is attained in The Southwestern States Telephone Co. exchanges, the occasion is deserving of publicity on past station growth along with photos being taken of the installa-

"The ground-breaking ceremony, in connection with construction of a new building, is an effective public relations activity. . . ."

*Mr. Post is Public Relations Director of Southwestern States Telephone Co., Brownwood, Tex. Parts 1, 2, 3 and 4 appeared in Dec. 5, Dec. 19, Jan. 2 and Jan. 16 issues.

tion showing the recipient, the installer, and the local telephone manager. The subscriber of the milestone telephone is given a free long distance telephone call to any place in the continental United States.

Of importance in this particular activity is the selection of the subscriber of the milestone telephone. It is not possible to select in many exchanges the exact milestone telephone, therefore, if you can only determine the day or week it will be installed, you can then choose a suitable subscriber for the milestone telephone from the subscribers whose telephones will be installed that day or week. After a family has been chosen for the milestone telephone, it is important that a representative of the telephone company explain the entire activity in detail to the subscriber and that the subscriber's permission to participate in the milestone ceremony be secured.

The big value in the milestone ceremony is that it points out the growth and the development of the local telephone system.

Public Talks

An important public relations activity, in which nearly every employe can participate, is the public address.

What telephone people have to say about their work and their company will be listened to with interest if it is well presented. This does not mean that the employe must be an accomplished speaker, but merely that he or she should be able to talk out of personal knowledge about things that have meanings to local audiences.

Public talks can be used effectively before any of the large number of organized groups in the community, such as chambers of commerce, civic, social, fraternal, professional, church, PTA, women's organizations, schools, etc.

"Exhibits and displays in the telephone office and other places help build good public relations. . . ."

"Telephone company floats in civic parades bring good publicity and public relations to the telephone company. . . ."

In The Southwestern States Telephone Co., all supervisors are particularly urged to make public talks. Outlines of five public talks are furnished them as guides.

They are told that they are capable of making talks, whether or not they have ever made a speech before. The fact is that the telephone business is of interest to almost anybody. The telephone man or woman knows his or her job and knows the telephone business. It is stressed to them that what they have to say is of such significant interest to the public that they can present an interesting program to a group regardless of speaking experience. The biggest hurdle is getting the employe to make the first talk.

Chief operators certainly should make talks to school groups and other organizations—not only to increase the understanding of the traffic phase of the business, but to help set a good climate for recruiting new employes. Chief operators are particularly logical speakers for women's organizations, as they are groups which seldom hear telephone talk, since most telephone companies devote the most effort to making talks to service and civic clubs, such as Rotary and Lions.

Plant department personnel can perhaps talk on subjects of more interest to more people since the complexity of that part of the business is such that everyone is interested in knowing how telephone equipment works and of the future ahead in the communications field.

Public talks can be advantageous for members of the commercial department too, since they afford cashiers and business office representatives the opportunity to discuss merchandising items such as color telephones, extensions, hands-free sets, Electronic Secretaries, etc.

Some larger telephone companies will want to consider setting up a speakers' bureau—with a list of speakers and subjects available for offering to community organizations.

Telephone people who help bring entertaining programs to interested audiences in their communities will find the experience rewarding and enjoyable. Public talks benefit the employe personally as they raise his standing in the community and help improve the individual's self confidence. At the same time, public talks are an effective way to foster good-will of the public toward the telephone company.

Central Office Visits

Central office visits is another activity in which the entire employe group may and should participate.

Like the open house, the central office visit is another opportunity to acquaint groups of people with facts about their telephone service by showing them through the central office.

Employes can contribute to the suc-

"An important public relations activity, in which nearly every employe can participate, is the public address. . . ."

cess of this activity if every one of them is informed that he or she may invite any group or organization to tour the telephone building. Employes should realize the importance of asking any group (church, fraternal, social or civic) through the office. They may also invite their friends, acquaintances and relatives to see the place where they work. In such instances, the employe should be permitted to accompany these people on the central office visit.

Telephone people should know that the doors of the telephone company are always open for visitors. When visitors are taken through the office, they should be treated courteously and with interest and enthusiasm.

Telephone companies should not depend entirely on the employe group to bring people to visit the central office nor should the company officials sit back and wait for groups to come see the office. An aggressive program to promote central office visits is necessary.

Once a year, the telephone company manager should, by letter or in person, contact school officials to let them know the company wants school children to tour the central office. He should also periodically extend central office visit invitations to the city council, all civic and service clubs, women's organizations, scout groups, the local ministerial association, the local medical association, and various other professional, social, fraternal, and church organizations. A record should be kept of the number of subscribers who tour the office each year.

"A good opportunity to reap good public relations is the publicity that can be received whenever the company reaches a significant 'milestone' in number of telephones served. . . ."

Other Activities

There are countless other public relations activities that can be carried on by the local telephone company. An effective PR program might include any of the following:

(1) Film showings.
(2) Exhibits and displays.
(3) Family nights.
(4) Rural celebrations.
(5) Business-education days.
(6) Radio programs.
(7) Dial celebrations.
(8) Subscriber attitude surveys.
(9) Institutional advertising.
(10) Direct mailings to thought leaders.
(11) Floats in civic parades.

In the next and final article, good corporate citizenship and public relations will be discussed. This will include participation of employes in community activities, memberships of employes in civic organizations, company donations and contributions, and company memberships in chambers of commerce.

Pakistan, Libya, USSR, New Zealand Report Progress

Looking around the world, telephone-wise, Pakistan reports on the preparations it made for President Eisenhower's visit to Karachi as follows:

Three telephone "channels" operating 24 hours daily, handling a traffic of at least 150 calls per day, were made available. This is compared to the normal provision of one "channel," night hours only, handling 20 calls. The London "channels" during the President's visit were used to transmit calls to New York.

One circuit, 24 hours daily, to Paris. Capacity, 50 calls, compared to no connection normally.

Two circuits, 24 hours daily, to Berne, Switzerland. Capable of handling 100 calls, compared to one circuit, two hours daily, capacity five calls. New York was also available via Berne.

A pool of two overseas circuits for other important places, working five hours daily, capacity 25 calls. Telephone handling capacity for overseas was thus brought up from 50 calls per day to over 300 calls.

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On the African continent, Libya plans to build a new exchange in Tripoli. The exchange will provide 2,000 lines for operation in the first year and 1,500 in each successive year until 10,000 lines are installed.

A 24-channel radio-telephone link connecting Idris Airport and Tripoli is also planned. It will replace an overworked two-channel link which was reported insufficient for telephone traffic.

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Also in the East, the Soviet Ministry of Communications has announced the opening of operator toll dialing between Moscow and Warsaw.

•

In New Zealand, construction of a telephone and television microwave link between the North Island cities of Hamilton and Palmerston North was to be started on Jan. 5. Its estimated cost is 1 million pounds (approx. 2.8 million dollars). The work is expected to take nine months.

When the system is in operation, a toll message which originates in Auckland will be able to go by coaxial cable to the terminal station at Frankton (near Hamilton) and from there over a series of repeater radio stations to Palmerston North. The final stage will be along the coaxial cable to Wellington.

The microwave system to be used has a very high operating frequency and it provides multiple channels. Typical working frequencies will be 4023, 3810, 4139 and 3926 megacycles.

The system will begin operation with two microwave sets. These will provide 72 toll channels for Hamilton and a separate 120 for the Auckland exchanges.

An automatic switching device will see to it that the more efficient system will be the one used for the toll channels. The automatic changeover between the two sets is expected to take only a fraction of a second.

Elected Mich. Bank Director

T. A. Saunders of Muskegon, president of the General Telephone Co. of Michigan, has been elected to the board of directors of the Hackley Union National Bank of Muskegon, according to an announcement by William R. Monroe, bank president.

YOU GET 15 auxi WITH

Executive Quick-Call Service for the man of authority. He calls key men by simply pressing a button—no dialing! For extra convenience, this service can be used with our transistorized Speakerphone.

This is only one of the 15 Auxiliary Services that you get with Automatic's P-A-B-X systems. For further details about Executive Quick-Call Service, ask for Circular 1840-A.

iary services

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8. Public Address Cut-in
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11. Paging Telephone
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13. Automatic Recorder-Announcers
14. Secretarial Answering
15. Direct Line

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Here's everything you need to promote P-A-B-X. Built around promotions successfully used by many telephone companies. Includes step-by-step selling plan, catalog, data folders, suggested sales letters, sample survey form and proposal—even a contract. For your free kit, write Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., Toronto, 16.

AUTOMATIC ELECTRIC GENERAL SYSTEM

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GENERAL TELEPHONE & ELECTRONICS

Mechanized Handling of Coin Box Keys

By WALTER H. HEINER*

W. H. HEINER

MECHANIZED filing has brought new speed and accuracy to a traditional job that has often posed headaches for telephone companies — housing, pulling, and re-filing coin box keys.

A rather ironic aspect of the situation here at Southwestern Bell Telephone Co. is the fact that the problem solved by one machine was brought to a head following the introduction of other office machines. When we converted to punched-card accounting four years ago, we adopted a due-date system for coin box collections. This meant that our old storage method—in which the keys were stored in route groups according to the days set aside for pickup—was no longer practicable.

Adding to the problem was the fact that coin box collection, in our case, is a substantial operation. Southwestern Bell services five states—Missouri, Arkansas, Kansas, Oklahoma and Texas. Our coin department is responsible for collections within a 50-mile radius from St. Louis, involving 17,000 keys.

In the past, certain days were set aside for pickup, and pulling the necessary keys from the rods on which they were kept posed no unusual problem. Punched-card methods, however, make

Leo A. Anderson, coin department manager, Southwestern Bell Telephone Co., St. Louis, Mo.

it possible for us to know which boxes should be checked with the greatest frequency. Logically, therefore, collection of specific boxes must be made as necessary. Thus, our present due-date system, which immediately created a problem in key storage.

Careful study led us to what is, in effect, a pioneering use of Remington Rand's Conve-Filer unit, an electrically-operated file which brings filed material to the operator at the touch of a button. While there is nothing new about mechanized filing, we understand ours is the first organization to use the Conve-Filer for housing keys.

One or two additional questions had to be resolved, however, before we were able to put it to work. First, since the unit was designed to house cards, it had to be adapted to hold envelopes containing our keys. We were assured this could be done, and it was.

Then came the matter of the envelopes themselves. Investigation showed that standard envelopes of the small size we needed were not strong enough to withstand frequent handling. The answer came through a specially designed envelope which meets both strength and size requirements.

Now, all our keys are filed in envelopes within the Conve-Filer, in route order. All the operators need know is the route number to assure quick and easy location of the needed key.

The keys are pulled the day before they are to be used. In other words, keys needed for Wednesday are taken out Tuesday afternoon. On the same day, keys used the previous day are re-filed.

In practice, this means that about 500 keys are pulled, and 500 re-filed every day. With this turnover of 1,000 keys, the efficiency offered by our "automated clerk" has proved invaluable.

In contrast with previous manual methods, the present operation is a model of simplicity. Instead of having to reach up to a rod 1,000 times a day, one clerk handles the entire turnover while comfortably seated. She pushes a button, and a conveyor-like belt automatically moves trays before her. It stops when the tray containing the key she wants is in perfect working posi-

(Continued on page 37)

Selector buttons (lower left) on the Remington Rand mechanized Conve-Filer unit enable the operator to pull and file 1,000 coin box keys every day, without leaving her seat.

*Mr. Heiner is District Manager of Southwestern Bell Telephone Co., St. Louis, Mo.

ADVERTISEMENT

Railroads are far and away the No. 1 Carrier. And they intend to keep it that way! Not by building more track (trackage is shrinking year by year), but by making each mile carry more tons per hour, per day.

Double the freight on a single track

THE telephone was still to be invented in 1875. Railroads, at this time, were well started on their most lusty period of growth. They already had a communication system of their own in full operation. Many an oldster can remember going down to the railroad station when he wanted to get in touch with the "outside world."

In 1876 came an invention that was to change our way of life. That its impact was greater for the ordinary citizen is understandable: before the telephone there was no communication medium that was both fast and suited to the farmer, the business man, the townsfolk. The railroads, on the other hand, had an elaborate system of message dispatching that met their requirements. It was a real question—at this time—whether a change to telephone-type communication could be justified.

In 1894, when Stromberg-Carlson was founded, telephony was still in its infancy—local in character compared to the railroads which, a quarter century earlier, had spanned the continent.

During the ensuing years the telephone industry has grown into a business giant, producing the country's largest corporation. And in the field of moving raw materials and finished goods—*delivering* the world's highest standard of living — railroads still lead all other forms of transportation . . . by billions of tons!

Railroads way out front

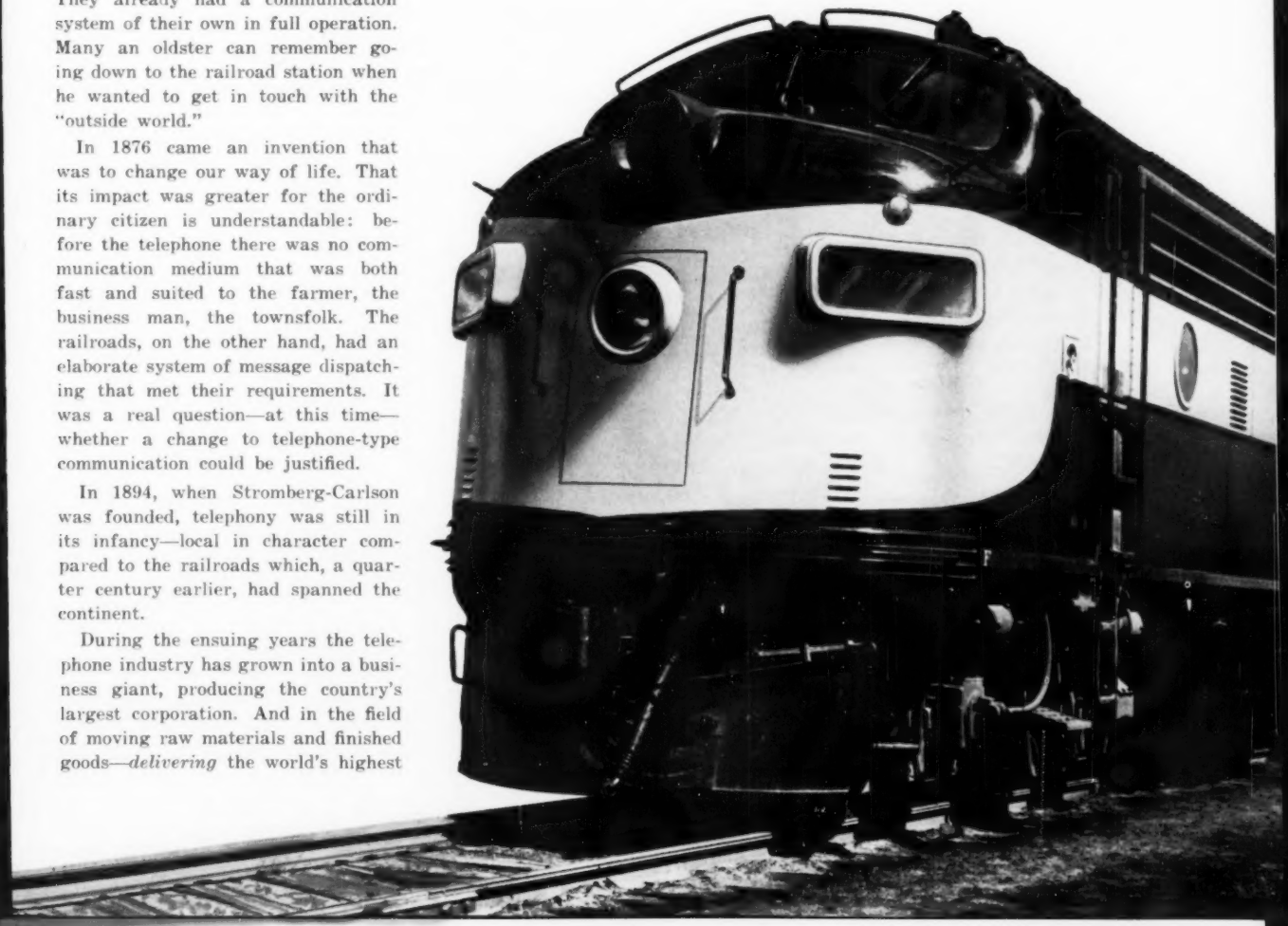
Government-supplied figures (1957) show that railroads far outclass all other means of moving materials. Imagine a 100-car freight train. Represent the ton-miles carried in motor vehicles by gondola cars; there would be 19 of these on our 100-car train. Let the freight moved over inland waterways be flat cars; you'd need 17 of these. Pipeline ton-miles—tank cars on our fictitious train—would fill another 16 cars. And air freight (approximately one car) could fit into the caboose. All the rest of our 100-car train—47 cars or 47.04%—would be *freight carried by the railroads.*

The facts prove that railroads are the backbone of our industrial might. And they intend to keep it that way! Not by building more track, but by using each mile more efficiently.

Communications the key

Two decisive steps have brought this about: conversion to diesel operation so that greater tonnage can be moved in less time; and up-dating communications so that increased efficiency can be realized.

To double the freight on a single track requires split-second timing.



Dispatchers must know the exact location of every moving train—how long it will take to clear a given section. A breakdown must be instantly reported. Rolling stock must be efficiently classified in the assembly yards. Major control points must have message circuits to each blockhouse. Speedy, dependable, voice frequency communication is doing this. Stromberg-Carlson builds it.

4-Wire especially for railroads

The Northern Pacific Railroad faced a problem well known to most other lines. It required some thru-circuits, with optional tandem points, that would be faster, afford better transmission quality, and could be *proved in economically.* The Northern Pacific put its own communication team to work on the problem, and after detailing all the requirements, looked for a communications equipment maker to design an economical system.

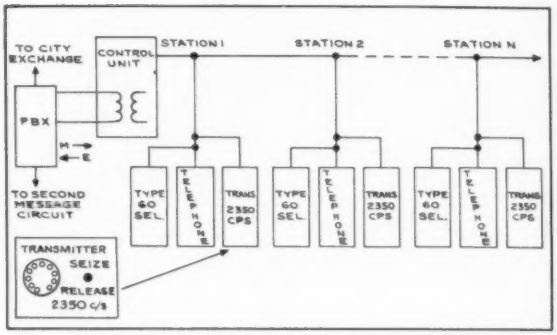
At Stromberg-Carlson they found engineers well grounded in both telephony and the unique communication requirements of railroading. These men suggested an entirely new approach to equipment design that met all specifications within a cost structure that could be justified.

Four-wire switching—an old art—became a new and entirely practical answer to the problem of these seasoned railroad men. The block diagram below shows terminations of the Northern Pacific system, and how applique circuits were designed to make greatest possible use of existing facilities.

The diagram also shows the essentially non-competitive relationship between telephone company service as a locally oriented public utility, and a far-flung railroad communication system geared to the very different requirements of transportation and following its own right of way.

Message Circuit Dialing

This term—unfamiliar to telephone companies—is crammed with meaning (and promise) for railroad communication experts. One large western road, learning through the "fraternity" that Stromberg-Carlson has perfected this technique, asked if their lines could be used for operational tests. This railroad was both surprised and pleased to learn that the Stromberg-designed system is already in operation for an eastern road in the vicinity of Buffalo, N. Y. On the basis of completely satisfactory field experience, this railroad has requested proposals for extending message circuit dialing to some of its other divisions.



Message Circuit Dialing—simplified block diagram.

In Message Circuit Dialing, as in 4-Wire Switching, Stromberg-Carlson started with the premise that railroads would like to utilize communication equipment already in service and paid for. Therefore the system builds on to existing apparatus and transmission lines, protecting an investment that is already large. The second diagram shows this message circuit as now in use.

Don't discard - - - - modernize

Using standard local battery telephone instruments and the familiar Type 60 Selector, as found in most railroad systems, Stromberg-Carlson substitutes an automatic control unit for the manually-operated message circuit key box. A 2350 cps tone transmitter operated on the existing 3 or 4.5 V dry cell battery is employed for seizure, dialing, time-out reset, and release signaling.

Among the novel features of this equipment are: instantaneous dial tone, generation and out-pulsing at speed of 3½ pps, waystation-to-waystation calls without the use of PBX equipment, all call or master call from waystation or PBX, time-out and warning tone on calls to PBX when answer supervision is not received. Also provision for time-out cancellation on calls from the PBX, and time-out reset (by dialing digit "1") after warning tone has been received.

The Message Circuit provides direct dial-thru circuits from a waystation, through the PBX, to the PBX stations or to the local (city) exchange. Similarly, calls from the city exchange or any PBX station can be routed direct to waystations on the Message Circuit over an assigned access level on the PBX.

Two or more Message Circuits may be tied together via PBX for interdivisional use wherever the accumulated line losses do not exceed 25 db loss.

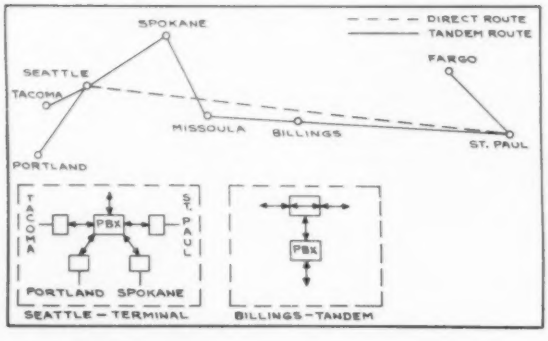
Each useful; combination best

Railroads have long asked for help in both of these areas, as they modernize communications in keeping with the advances they have made in other phases of operation.

Four-Wire Switching, to circumvent transmission losses and inefficiency at tandem PBX points, raises the quality level while increasing speed of connection on direct circuits between switching centers.

Message Circuit Dialing is a faster, more efficient method for providing voice communication on a divisional basis, using existing equipment as far as it is applicable today.

Singly, either can be justified in terms of operating efficiency. Together they supplement each other; achieve a solution to both local and long distance communication problems of railroads . . . in the railroad pattern.



4-Wire switching in use by Northern Pacific Railroad.

tion before her. She pulls the envelope she wants, and goes on to the next one.

The Conve-Filer can house 20,000 keys. Our unit, at present, contains 17,000, meaning we have room for expansion.

In essence, the mechanized file is an extension of our machine accounting methods. With paperwork speeded, it was only logical that many remaining manual methods would prove outmoded. What we now have is a unit which enables the key clerk to function as efficiently as the people who are dependent on the punched-card machines to help speed their work.

Forder Moves from Michigan To General Service Corp.

J. B. Forder, depreciation and valuation engineer for the General Telephone Co. of Michigan, will be transferred to the General Telephone Service Corp. in New York, on Feb. 1, according to T. A. Saunders, company president.

Mr. Forder began his telephone career June 1, 1948 with the Federal Telephone & Radio Corp. in Clifton, N. J.

In March 1952, he joined General Telephone Co. of Michigan as an equipment engineer. He was appointed planning engineer in October 1953 and promoted to depreciation and valuation engineer in October 1958.

Mr. Forder attended Stevens Institute of Technology and is a University of California graduate. He is a World War II Navy veteran.

Right and Duty

". . . there is no right whatever inherited by man which has not an equivalent and corresponding duty by the side of it, as the price of it.

"The rights, advantages, capital, knowledge, and all other goods which we inherit from past generations have been won by the struggles and sufferings of past generations; and the fact that the race lives, though men die, and that the race can by heredity accumulate within some cycle its victories over Nature, is one of the facts which makes civilization possible.

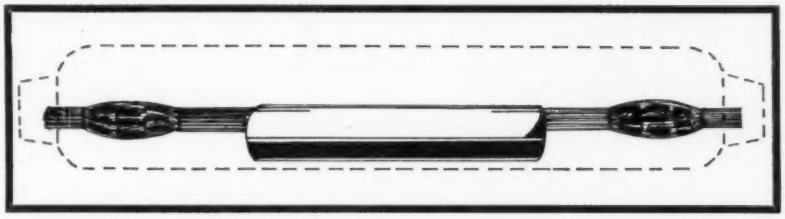
"The struggles of the race as a whole produce the possessions of the race as a whole.

"Something for nothing is not to be found on earth."—WILLIAM GRAHAM SUMNER, "What Social Classes Owe to Each Other."

CEECO LOADING COILS

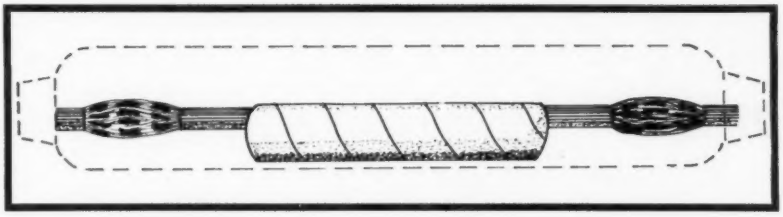
Units for Splicing Mounting

These assemblies are supplied on a wooden dowel, sometimes called sleeve mounted for use in the cable splice.



TYPE 162 FOR MOUNTING IN PLASTIC CABLE SPLICE

Type 162 assemblies can be supplied containing from one to 16 coils of either Type 632(88MH) or Type 638(44MH) and are for use in plastic cable splice. Types MF10, MF11, 641 and 642 coils can be furnished for inter office and toll entrance cables.



TYPE 167 FOR MOUNTING IN LEAD CABLE SPLICE

Type 167 assemblies can be supplied containing from one to 16 coils of either Type 632(88MH) or Type 638(44MH) coils and are for use in lead cable splice. Types MF10, MF11, 641 and 642 coils can be furnished for inter office and toll entrance cables.

CEECO assemblies give "Life like" voice transmission and reception to your long cable and rural distribution wire circuits. "Life like" telephone transmission is a clear, easily understandable telephone conversation over the necessary frequencies present in the voice to be heard via the telephone in the same volume as in "face to face" conversation. Telephone companies providing such quality service will increase subscribers desire to use "LONG DISTANCE" more often, thus increasing revenue.

Write us for assistance on your loading problems. CEECO loading coils are sold by your telephone equipment supplier.

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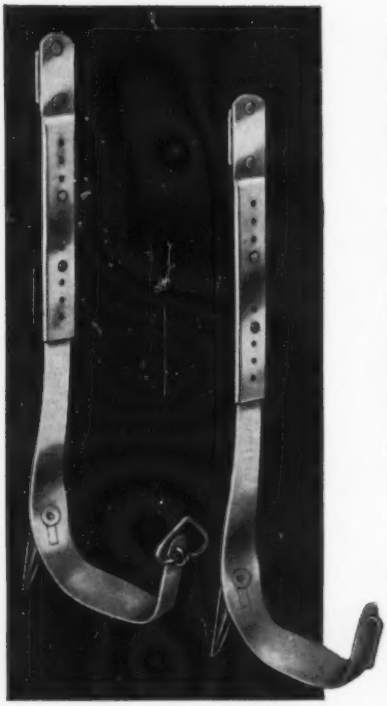
Phone EStebrook 8-3109



No. 1958-AR

NEW KLEIN Replaceable Gaff Adjustable Climbers

These new Klein Replaceable Gaff Climbers assure maximum quality and safety. We recommend leg irons be replaced after three sets of gaffs have been used.

The easily replaceable gaff is held in position by a self-locking screw. Full impact is absorbed by the gaff and leg iron. No load is transmitted to the screw.

Adjustable to 14½, 15, 15½, 16, 16½, 17, 17½, 18, 18½ and 19 inches. Made in matched pairs, right and left. Available with triangular ring at ankle or riveted ankle loop. Aluminum finish. Every climber individually tested.

WRITE FOR BULLETIN 559

Bulletin 559, giving full information on Klein Replaceable Gaff Adjustable Climbers, will be sent on request.

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Courts and Commissions

Ask to Withdraw Telephones Of 2 Who Held N. J. Line

The New Jersey Bell Telephone Co. on Jan. 15 asked the New Jersey Department of Public Utilities to hold a hearing to determine if the alleged refusal to yield a party line on the part of Mrs. Antoine Hausler, Springfield, and of Mrs. Peter Zelinski, Millburn, would warrant the company's withdrawal of telephone service from the two women (TELEPHONY, Jan. 9).

The Bell company is reported to be considering withdrawal action because Mrs. Hausler and Mrs. Zelinski, according to Dr. Marvin Becker, refused to yield the telephone line so that he could call an ambulance for Mrs. Sophie Wetzel, an elderly heart attack victim.

Millburn Magistrate Milton Freiman found Mrs. Zelinski guilty of violating the New Jersey Disorderly Persons Act, and fined her $200; but in the case of Mrs. Hausler, he ruled that he had no jurisdiction because she does not reside in Millburn, and dismissed the complaint against her. Mrs. Zelinski's appeal of her conviction was to have been heard in Essex County Court on Jan. 25.

Illinois Company Receives Authority for Increase

The Northern Illinois Telephone Co., Lanark, which petitioned the Illinois Commerce Commission on Jan. 20, 1959 for a gross rate increase amounting to $95,000, on Dec. 16 received approval of a gross increase amounting to $75,000, the company reports (TELEPHONY, Feb. 14, 1959).

The new rates for the Northern Illinois company's 11 exchanges are as follows:

For Brookville, Lanark, Pecatonica, and Shannon

One-party business	$7.65
Two-party business	6.90
Multi-party rural business	5.90
One-party residence	4.90
Two-party residence	4.40
Four-party residence	3.95
Multi-party rural residence	3.95

For Davis, Durand, Forreston, German Valley, and Seward

One-party business	$7.50
Two-party business	6.75
Multi-party business	5.75
One-party residence	4.75
Two-party residence	4.25
Four-party residence	3.80
Multi-party rural residence	3.80

For Creston only

One-party business	$7.35
Two-party business	6.60
Multi-party business	5.60
One-party residence	4.60
Two-party residence	4.10
Four-party residence	3.65
Multi-party rural residence	3.65

For Winslow

One-party business	$7.00
Two-party business	6.25
Multi-party business	5.45
One-party residence	4.45
Two-party residence	3.95
Four-party residence	3.50
Multi-party rural residence	3.50

Rates for the Northern Illinois company's exchanges are based on the number of telephones available to subscribers. For example, Winslow exchange is in the lowest group, or from 0-500 telephones. The groups progress upward from 501-1,000 telephones; 1,001-2,000 telephones; and from 2,001-4,000.

Ark. Company Asks PSC To Uphold Delinquency Penalty

The Arkansas Public Service Commission on Feb. 2 was scheduled to hear the complaint of the Allied Telephone Co., Little Rock, that the city of Fordyce has stopped the company from charging penalties to subscribers who do not pay their bills on time.

The company said the city council had adopted an "unjust, unreasonable, and unlawful" resolution prohibiting it from adding a 10 per cent delinquency penalty to bills.

The Allied company stated that if it were forced to operate under the provisions of the resolution, it might have to require service deposits and raise rates so that it could afford to carry delinquent accounts.

N. M. High Court Rules City Must Pay Relocation Costs

The New Mexico Supreme Court, it was reported on Jan. 8, has reversed a district court decision excusing the city of Grants from paying the costs of moving utility lines for state highway construction.

The state had sought a $40,763 judgment against Grants for the cost of relocating water and sewer lines for

(Continued on page 42)

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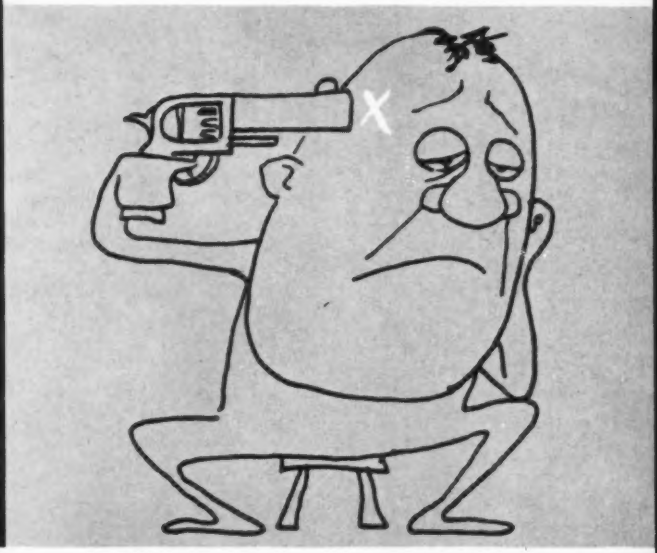
We just aren't going to do anything drastic if you are getting good service from somebody else and do not choose to do business with Leich.

However, with your kind permission we would like to state again that Leich is at your service with a complete line of high quality, job proven telephone equipment and supplies. We have five, big, fast-service warehouses which carry adequate stocks of most everything you need.

Our people are trained to understand your business and carry on the tradition that Leich has for giving better service than you even expect. On your next supply order - try Leich.



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Look for much that's new and exciting to happen in the communications systems field in the next five years . . . DDD for most of U.S. and Canada . . . CAMA for more and more large toll usage areas . . . line concentration . . . electronic switching . . . a rapidly expanding demand for private line services . . . and a great deal more advances requiring special design.

Despite satellites, the workhorse of systems communications will still be the same old cable pairs. But with alternate routing and VNL you'll regard them in a new light; and you'll take a more searching look at load coil spacings, net loss and return loss, while bias and sigma (old words with new meanings) will force you to correct trunks that don't meet minimum standards.

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AIRTRONICS Artificial Lines can be a vital tool in your technical training program for plant and engineering people. In them are combined all the essential elements for use in demonstration lectures, in laboratory classes — or both.

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AIRTRONICS standard Artificial Lines accurately simulate a loaded or non-loaded cable pair of any desired length — from 600 to 39,600 feet.* Push-button switching affords instant control over total length or load section lengths, so that coil spacings may be set to better than 1%, or as much as 10%. Common irregularities such as bridged taps, mixed loading or coils omitted can be introduced in a moment.

**Available with plug-in units for either #22 or #24 gauge cable, or mixed #22 and #24 gauge. Other commonly used gauges available on special order.*

For more detailed technical specifications, just ask us to rush you AIRTRONICS Artificial Line Brochure #1.021A. It will include equipment arrangements for a number of demonstration set-ups clearly showing the effect of equalizers, loading systems, reflections, singing points, and other characteristics.

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widening U. S. Route 66 in 1955. The Santa Fe court trying the case dismissed it at the request of Grants.

The state's supreme court held that "authorities are unanimous that the common law places the cost of relocating utility facilities on the owner thereof in the absence of statute to the contrary."

The 1959 New Mexico legislature passed a law allowing the state to pay such costs. The state highway department has questioned the constitutionality of the law.

The New Mexico high court further noted: "At the time this case was filed, a municipality owed a duty to relocate its municipally owned sewer and water lines which were in a public highway at its own expense when it was necessary to provide a safe and adequate highway."

Ask Rate Raise in Ohio

The Ohio Public Utilities Commission has under consideration a rate raise request by the Mansfield Telephone Co.

Ask Sale OK in Missouri

The Meramec Telephone Co., St. James, on Dec. 22 filed an application with the Missouri Public Service Commission to purchase the Licking exchange of the Western Light & Telephone Co., Great Bend, Kan. The Meramec company plans to convert Licking to dial operation.

Authorize Rate Raise; Grant Purchase OK in Kansas

The Kansas Corporation Commission on Jan. 12 authorized the Elk Falls Telephone Co. to raise its rates by $1,452. The increase will affect the company's 119 subscribers.

Also in Kansas, Pioneer Telephone Association, Inc., Ulysses, was granted permission to acquire the facilities of the Deerfield Telephone Co. from Oley W. Draves.

Two Oklahoma Companies Granted Incorporation OK's

The following two companies have been granted charters of incorporation in Oklahoma:

Pottawatomie Telephone Co., Earlsboro. Incorporators are John W. and Helen P. Hines of Earlsboro and Joseph J. Rucks of Oklahoma City.

Lenapah Telephone Co., Delaware. Incorporators are Charles W. Childers of Delaware, Edith Childers of Lenapah and R. J. Childers of Tulsa.

Holds Local Nev. Customers Must Bear Municipal Tax

The Nevada Public Service Commission recently authorized Bell Telephone Co. of Nevada to surcharge customers in the city of Winnemucca with an amount representing a flat license tax imposed upon the company by the city, it has been reported by the NARUC (National Association of Railroad & Utility Commissioners). Similar surcharges are made by the company in three other cities in Nevada.

The Nevada commission opinion held that collection of a locally imposed tax from local consumers is just and reasonable since the benefits of the revenue received from the tax go to the consumers within the municipality imposing the tax and thus residents should be charged therewith; that the same principle applies whether the business license taxes are levied at a flat rate or by a percentage of revenue; and that if the company absorbs a local tax, the burden of payment falls not only on users or customers within the area, but upon users or customers systemwide.

The commission found that the only way to prevent this resulting discrimination is for the customer or user within the boundaries of the levying political subdivision to pay directly as an added charge any taxes of this nature.

Decision Reached in Preformed-Fanner Suit

On Jan. 6, the United States District Court for the Northern District of Ohio, at Cleveland, announced its decision in the action brought by Preformed Line Products Co. against The Fanner Mfg. Co.

Judge Charles J. McNamee, who tried the case, held the dead-end patent (U. S. Patent No. 2,761,273) valid and infringed by Fanner but denied any damages or injunction to Preformed until certain commercial practices which he found to be "misuse" of the patent are shown not to have been "misuse" or to have been terminated.

The "short pitch" armor rod patent (U. S. Patent No. 2,609,653) was found invalid and not infringed by Fanner.

Preformed's claim of unfair competition was dismissed for lack of jurisdiction, without prejudice to the right to bring such an action in a court of competent jurisdiction.

Fanner's counterclaim for damages was also dismissed.

Approve EAS in Michigan

The Michigan Public Service Commission on Jan. 9 approved Extended Area Service between three General Telephone Co. exchanges and a Michi-

- Low cost—light weight—portable.
- Stampings has over five year's experience in building trouble-free, productive trenchers.
- More in use than any other in its class.
- Shipment made 1 day after order.
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- Low cost per foot—more profit per job.
- Minimum of working parts—hardly any maintenance required.
- Cuts neat trenches—easy back-fill.
- Digs trenches 3" wide to 24" deep—or 4" wide to 18" deep.
- Dealers in principal cities.

POW-R-SPADE IS MADE BY STAMPINGS, INC.

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31 CHAPTERS

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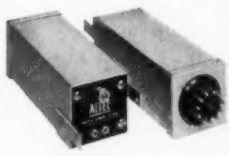
Compact · Versatile · Easy to Service

The advanced design of ALTEC telephone equipment makes it ideal for modern telephone systems. In addition to its reliability and high standard of performance, ALTEC equipment requires a minimum amount of space. Inherent flexibility makes it useful in a wide range of applications. Easy maintenance is **designed in** to save time and money in servicing.



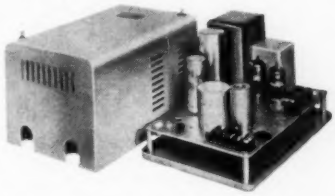
447A TRANSISTOR AMPLIFIER
Telephone Repeater Type

Directly interchangeable with vacuum tube repeaters; dimensions are identical. Requires only 24 - 48 volts. Eliminates need for 130v supply.

SPECIFICATIONS:
Type: Repeater Amplifier (transistorized) • Gain: 37 db from and into 600 ohm loads • Power Output: +18 dbm (at +10 dbm distortion is 1.5%, 300-3000 cps) • Frequency Response: −1 db at 200 and 5000 cps referred to 1000 cps • Input Impedance: 600 ohms • Output Impedance: 600 ohms • Output Noise Level: −70 dbm • Controls: Input volume control which varies gain from −2 db to maximum gain • Power Required: 17 - 24 v (50 ma @ 20 volts) • Transistors: 1 — 2N191, 1 — 2N188A • Dimensions: 1¾" x 1¾" x 6" • Color: Cadmium plate with dichromate finish • Weight: 14 oz. • Mounting: 11 pin Amphenol 86 CPN plug • Monitor Tap: Auxiliary output winding 11 db below 600 ohm winding available at test jacks on front panel and at connector pins at rear of unit • Accessories: Panel for rack mounting 10 repeaters; Rack mounting power supply capable of energizing 100 repeaters; Equalizer; Panel for mounting up to 10 equalizers; Assembly for mounting a 447A in 105B apparatus box.

444B AMPLIFIER
COMPRESSION TYPE

Compression, attack and recovery times are fixed quantities providing optimum performance for message use.



SPECIFICATIONS:
Type: Compressor Amplifier • Gain: 600 ohm input: 70 db • Bridging input: 57 db bridging 600 ohm line • Maximum Compression: 35 db change in input results in 15 db change in output • Power Output: 34 dbm at 30 db compression; 35 dbm with rectifier tube removed • Frequency Response: −2 db at 100 and 3000 cps relative to 1000 cps; More than 10 db down at 10,000 cps • Input Impedance: 600 ohms balanced and 12,000 ohms balanced for bridging • Source Impedance: 600 ohms • Load Impedance: 4 and 600 ohms • Noise Level: 80 db below rated output; −115 dbm equivalent input noise • Power Supply: 117 volts, 60 cps, 30 watts • Tubes: 1 — 6BC8, 1 — 6AL5, 2 — 12BY7A • Dimensions: 9" x 6" x 5" • Weight: 7½ lbs. • Attack Time: 50 milliseconds • Recovery Time: 1 second for 63% recovery • Harmonic Distortion: At 33 dbm output, less than 5%, 200 - 4000 cps; At 30 dbm output, less than 2%, 200 - 4000 cps.

S-17B PROGRAM
AMPLIFIER SYSTEM

Cabinet houses two program-quality 437B amplifiers capable of multiple tandem operation, two 17224 equalizers, and two jack fields to facilitate testing, equalizing, and monitoring. Each amplifier contains its own AC power supply and mounts in the cabinet independently on a plug-in basis for easy replacement and centralized maintenance.

SPECIFICATIONS:
Output Power: +24 dbm • Distortion: not over ½% THD (30 - 15,000 CPS at +24 dbm) • Gain: at least 44 db; adjustable to minimum of 8 db • Gain adjustment: 2 db steps and 1½ db vernier • Frequency response: ±1 db, 20 - 20,000 cps • Equiv. input noise: −115 dbm • Input impedance (internal): 150/600 ohms ±5% • Output impedance (internal): 150/600 ohms ±5% as measured at output of the bridge • Longitudinal balance of input circuit and output circuit with 600 ohm connection: 55 to 60 db at 40 and 15,000 cps; 70 db at 1000 cps • Tubes: 1 — 12AY7, 2 — 12BY7A • Electrolytic condensers: Sprague 17D or equivalent • Transformer insulation: 1500 volt insulation between primary and secondary windings • Impendance change simply accomplished by reversing the impedance plug. Occupies 9⅜" of 19" rack space.

For complete information about ALTEC telephone and paging equipment write to address below or call PRospect 4-2900.

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12-59

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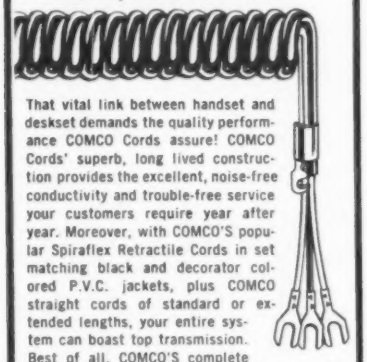

That vital link between handset and deskset demands the quality performance COMCO Cords assure! COMCO Cords' superb, long lived construction provides the excellent, noise-free conductivity and trouble-free service your customers require year after year. Moreover, with COMCO'S popular Spiraflex Retractile Cords in set matching black and decorator colored P.V.C. jackets, plus COMCO straight cords of standard or extended lengths, your entire system can boast top transmission. Best of all, COMCO'S complete line includes cords with the construction, terminals and strain relief you require, and immediate delivery is COMCO'S pride.

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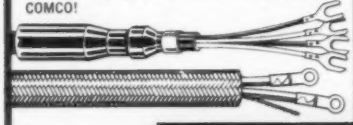
Black or brown nylon jacketed operator cords . . . nylon jacketed switchboard cords in white, slate, red or green . . . deskstand, test, patch and inter-communication system cords with tough P.V.C. jackets (ten colors and black) . . . all can be yours from one best source, COMCO!



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gan Bell Telephone Co. exchange. The exchanges involved are Davison, Swartz Creek and Rankin for the General company and Flint for Michigan Bell.

Rural Neb. Users Appeal Ruling on Boundary Change

Three rural telephone users between Lincoln and Martell, Neb. on Jan. 16 appealed to the Nebraska Supreme Court a decision of the Nebraska Railway Commission made July 18, 1958, which established boundary lines between the Lincoln exchange of The Lincoln Telephone & Telegraph Co. and the Martell exchange of the Capital Telephone Co., Hickman.

The Commission order had the effect of discontinuing dual service from both Lincoln and Martell for one of the appellants, the Roca Elevator Co. This subscriber now has Lincoln service only. The two other appellants were former subscribers of the Lincoln company and were transferred to the Martell exchange of the Capital company.

All three contend that they have a right to continue to be served on exchanges as they were before boundaries were changed. Boundaries were established at the time the Capital company purchased the properties of the Martell company, along with other properties.

OK Increase; Deem Prompt Relief Necessary in Montana

The Montana Board of Railroad Commissioners has granted the Mountain States Telephone & Telegraph Co. its first general rate increase in more than six years (See *"In the Nation's Capital,"* this issue; also TELEPHONY, May 30, 1959).

The commission, in a 2-to-1 vote, authorized the Mountain States company to increase the rates enough to produce an extra $1,125,939. The company had 10 days in which to submit a schedule of new rates.

The January, 1960 commission ruling stated that "present earnings of the company are deficient (and) immediate rate relief is necessary." Commission Chairman Paul T. Smith, who dissented, said, "the order of the majority . . . is excessive and unreasonable and is not justified by the evidence."

In 1957, the Montana commission rejected the company's appeal for a rate increase, and Mountain States appealed to the courts, where the commission was upheld. The company then appealed to the Montana Supreme Court (TELEPHONY, May 23, 1959), but later withdrew its appeal.

At the time the company dropped its appeal in the Supreme Court, it filed for a new rate increase on the ground that even had the commission approved its earlier request, it would not have been enough to reimburse the company for increased operating expenses, higher taxes, for the larger additions to its intrastate plant, and for other expenses.

The commission's latest order made note of a recent opinion handed down by the Montana Supreme Court which held that valuation must reflect a "present fair value of the property." On its net value, the court found that the company was earning 3.8 per cent, "neither fair nor reasonable under any standards."

The commission said a reasonable return would be 5.79 per cent, closely following a recommendation of Dr. Lionel W. Thatcher of the University of Wisconsin, who was retained by the commission as an expert. The company had sought a return of 7½ to 8 per cent, and groups opposing the increases urged a return of 4.9 per cent.

Montana rates for the Mountain States company prior to the current order were in effect from September, 1953.

Rule SW Bell Not Liable For Lightning Damage in Okla.

An Oklahoma farmer has failed in his attempt to win $200,000 in damages from Southwestern Bell Telephone Co. on the grounds his eyesight was impaired when lightning allegedly struck him through his telephone.

A district court jury at Hugo, Okla. on Jan. 18 found that Southwestern Bell had taken proper precautions against lightning injuries by its use of the telephone company protector, and added that Southwestern Bell was "not guilty of negligence."

As a result, the plaintiff, T. H. Coffman, is not entitled to any portion of the damages he sought.

Telephone company witnesses testified lightning could not have entered Mr. Coffman's house through telephone wires. They said it would have been grounded by a standard lightning protector.

They also contended the protector in Coffman's house showed no signs of the damage that would have resulted if lightning had passed through it.

Company witnesses included L. S. Inskip of Bell Telephone Laboratories; H. J. McMains, Bell's chief engineer for Oklahoma; Dr. Robert Varney of Washington University, St. Louis; Charles F. Cameron of Oklahoma State University; and E. L. Hassler and F. W. Fullerton, both of Southwestern Bell's engineering staff.

This is the second case in two years in which Southwestern Bell has been upheld defending against alleged lightning damage.

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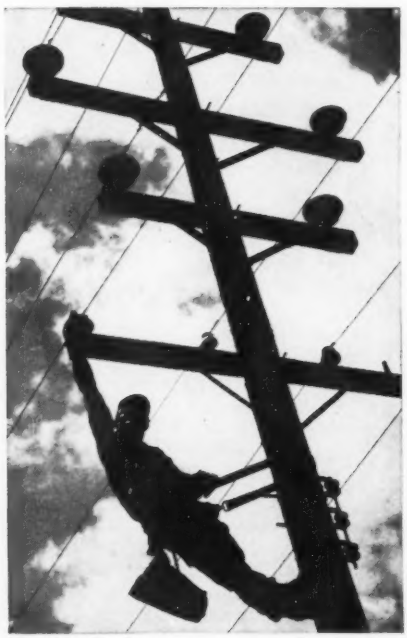

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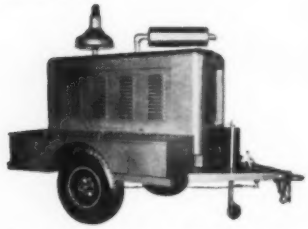

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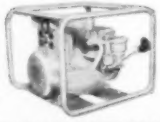

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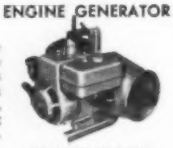

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Fourth U.S.I.T.A. Engineering Conference to be July 3-22

The annual Telephone Engineering Conference sponsored by the United States Independent Telephone Association will be held from July 3 to July 22 at Michigan State University, East Lansing, Mich.

As in the three previous programs, the 1960 conference will be directed toward the basic concept of "a course designed to help engineers of all communication companies secure a maximum utilization of every construction dollar.

A brochure on the 1960 program with application blanks will be mailed to USITA member companies during February. For advance registration or information, please contact Professor John U. Jeffries, Electrical Engineering Department, Michigan State University, East Lansing, Mich.

The following members of the USITA Subcommittee on Engineering Education also will gladly provide information concerning the program:

Russell J. Loveland, chairman
300 Montgomery St.
San Francisco, Cal.

I. B. Jackson
Director of Engineering
General Telephone Corp.
730 Third Ave.
New York 17, N. Y.

E. A. McKee Jr.
Engineering Director
Central Telephone Co.
Lincoln, Neb.

Over Horizon Transmission Connects U. S. and Nassau

"Over-the-horizon" radio transmission, the newest method of lobbing telephone messages across vast bodies of land and water, went into service on Jan. 17 between the United States and Nassau.

Service was started on the over-the-horizon system to meet the expanding telephone traffic between this country and the British colonial resort area.

The new system, utilizing a technique of blasting microwaves beyond the curvature of the earth, is equipped to carry 24 simultaneous telephone conversations.

The Long Lines Department of American Telephone & Telegraph Co. and the Telecommunications Department of the Bahamian government built the new radio link at a cost of $1,500,000.

The addition of the telephone circuits will relieve traffic on the nine radiotelephone circuits now in operation. The new system will substantially improve transmission and provide greater service between the U. S. and Nassau.

Telephone traffic in the past 10 years has increased more than sevenfold. In 1949, messages handled by Long Lines numbered 12,000 and during 1959 traffic rose to over 80,000 messages.

A large portion of the traffic is due to the growing number of annual tourists and the rapid commercial development in the islands.

Ten years ago, 32,000 tourists visited the Bahamas. This year the Bahama Development Board in Nassau estimates more than a quarter of a million tourists will spend time there. Long Lines pointed out that if the need arises, the system can be expanded to 72 circuits.

Terminals for the system are located at Florida City, Fla., and Delaporte Point on New Providence Island. The distance between the two sites is 186 miles.

Dish-like antennas are mounted on steel structures at each site. The structures are near buildings which house power and amplifying equipment.

The antennas beam microwaves toward the horizon in the direction of the distant site. As the microwaves pass beyond the curvature of the earth, they continue moving into the troposphere, an air mass surrounding the earth.

Here, a phenomenon occurs in which a small part of the energy in the waves is scattered downward toward the receiving antenna. The energy in these falling microwaves is sufficient to provide a reliable signal.

This type of operation is known technically as "tropospheric scatter propogation."

Open U.S.-P.R. Cable With Atlantic to Pacific Call

The longest operator-dialed telephone conversation, spanning 6,000 miles from San Juan, across the United States to Honolulu, Hawaii, on Jan. 26 highlighted ceremonies opening a new U.S.-Puerto Rico submarine telephone cable system.

Construction of the 17 million dollar link was carried out by the Long Lines Department of the American Telephone & Telegraph Co. and the Radio Corp. of Puerto Rico, a subsidiary of International Telephone & Telegraph Corp. It is the deepest telephone cable in the world.

C. Earl Schooley, director of operations for Long Lines, said use of the cable would have "significant" business and social values.

"We hope the improvement in communications will not only stimulate investment in Puerto Rico and boost the island's economy," Mr. Schooley added,

"but also encourage families and friends located in Puerto Rico and the U. S. to call each other."

At the recent ceremonies Kenneth M. Barbier, president of Radio Corp. of Puerto Rico, placed the first call over the cable to Mr. Schooley and Frederick R. Eckley, director of personnel and public relations for Long Lines. Also participating in San Juan was Henry H. Joyner, Long Lines' general manager of special projects and Clyde E. Dickey, president of the Puerto Rico Telephone Co.

Then, Teodoro Moscoso, director of the Economic Development Administration of Puerto Rico, spoke to the Lt. Governor of Hawaii, James K. Kealoha, on another line.

The conversation between the two men demonstrated how a business or personal call could hopscotch 6,000 miles from the Atlantic to the Pacific in a matter of seconds. A party in San Juan, for example, now merely picks up his telephone and gives the operator the Honolulu number he's calling. Within seconds, the called telephone is ringing.

Before today's cable opening, radio circuits provided the only telephone services from the U. S. mainland to Puerto Rico.

Operators in the United States now can dial directly to all telephones in San Juan, which total 65 per cent of telephones on the island. San Juan operators can dial direct on 90 per cent of all calls to the U. S. and Canada.

This cooperative display of the Selah (Wash.) Telephone Co., featuring extension telephones, was one of the exhibits shown in the lobby of the Selah branch of the National Bank of Washington. The display, arranged by Robert Johnson, Selah Telephone Co. office manager, remained in the bank for two weeks.

It was during last November and this January that the twin cables—one for each direction of speech—were laid by the veteran cableship, Monarch.

The system's terminal buildings are at West Palm Beach, Fla., and San Juan, a distance of 1,250 miles. Before the Monarch began deep-sea operations, the cables were dropped beneath the waters of the intra-coastal waterway and buried underground across Palm Beach.

About 75 miles northwest of Puerto Rico, the cables drop to a depth of five miles, into the Milwaukee Deep, which is the deepest point in the Atlantic Ocean. It is part of a gaping, eel-shaped crevice called the Brownson Deep.

Population Boom Means Big Market, Says Educator

Those in charge of marketing and selling in the telephone industry are becoming increasingly aware of the rising sales potential reflected in the rapid U. S. population growth. The kind of general market to be expected in the next ten years—the largest age groups involved, level of education completed—these and other factors affecting that market were some of the dimensions explored recently in a talk by Dr. Philip Hauser, chairman of the sociology department of the University of Chicago.

Dr. Hauser spoke on Jan. 12 to the joint meeting of the Chicago chapters of the American Marketing Association and the American Statistical Association.

The educator attaches great significance to the fact that the level of U. S. education is rising, and calls for improvements in selling and advertising techniques.

The 1960 census will show, Dr. Hauser says, the average grade level completed in the U. S. to be about 10.8. By 1970, however, he predicted that the school enrollment will reach 57½ million compared with the current figure of 47 million. Half the population 25 years old and over will have a high school education or beyond that.

Dr. Hauser said that consumer markets will be strongly affected by changes in population composition during the 1960's. This, he said, will be dramatically the decade of teenagers—15 to 19 years—and of young adults—20 to 24 years—who will increase by 44 per cent and 53 per cent respectively.

He noted also that the bumper crop of babies born in the post World War II period will be reaching marriage age during the first half of this decade, and there will be an increased demand for consumer durables for the next five years. In the latter half of the

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decade, this young married group will form an important market for housing.

Estimating the total U. S. population at the 1960 census to be about 180 million persons, Dr. Hauser predicted a population growth to about 214 million by 1970, "with every indication that income will also continue to climb during the decade."

In a pin-pointing forecast, the sociologist said that the greatest population growth rates during the sixties are likely to be seen in the Pacific coast states, but that the East North Central area will probably experience the greatest absolute growth. According to his prediction, California will add 5 million people; and New York, Ohio, Michigan, and Texas will add about 2 million persons each.

The 1970 census, commented Dr. Hauser, will probably show for the first time that the country's suburban population outnumbers central city population, and that some 56 per cent of metropolitan residents live outside the central city.

Closed-Circuit System Used In Employe Communications

The latest thing in employe communications, a closed-circuit telephone system that broadcasts company news,

was recently installed at Rockwell Mfg. Co.'s Pittsburgh headquarters.

In the accompanying photo, Miss Carol Fraley, of the company's personnel department, is shown recording the message for the day on an automatic answering device (rented from Bell Telephone Co. of Pennsylvania for $10 monthly). To hear the day's news, Rockwell employes—there are 600 at the headquarters plant—merely dial a special number and listen. Material runs the gamut from the latest promotions, employe and company awards, financial information and news about Rockwell's 22 plants, to vacation schedules, cafeteria menus, the weather and the scores of the girls' basketball games.

Some examples of recent messages:

"Jerome A. Earley, general attorney for Rockwell, has been named manager —tax planning. Mr. Earley, who joined the company's legal department in 1953, is a 1950 graduate of the University of Pittsburgh School of Law."

* * *

"For the ninth year in a row, Rockwell has been elected as one of several companies from among thousands to receive top national honors for 'excellence in management.' The award, presented annually by the American Institute of Management, is based on point ratings of such items as health of earnings, service to shareholders, research and development, production efficiency and sales vigor."

A single item or two or three short items are recorded each day—depending on the news available. Total time —60 seconds a day. Each morning Miss Fraley prepares a new message, sets the dial to "dictate" and reads the message into the telephone. She then sets the dial to "answer" and the message will be repeated automatically throughout the day to anyone who calls.

While an "in-plant" telephone system is not new, its application to an employe information program is unique.

"This setup," says Francis Curry, manager, headquarters personnel, "will enable us to provide our employes with the latest Rockwell information — almost as soon as it happens. It will supplement bulletin boards and personal letters which will, of course, continue to provide detailed information."

Complete First Arctic Undersea Telephone Cable

An important link in the rearward communications for America's Ballistic Missile Early Warning System (BMEWS) became a reality recently when the first undersea telephone cable above the Arctic Circle was completed. Owned by the United States Air Force, it connects air force installations in Greenland and Canada.

The Arctic undersea cable operation was carried out under the direction of the Western Electric Co. with the cable placing being handled by the Long Lines department of the American Telephone & Telegraph Co. Western Electric is responsible to the United States Air Force for the design, installation and testing of rearward communications routes for America's BMEWS project.

Four nations — Canada, Denmark, Great Britain and the United States— combined to make this first telephone cable beneath Arctic waters possible.

Ceremonies marking the first official call, held at Thule Air Force Base, Greenland, were attended by Maj. Gen. H. W. Grant, director-communications and electronics, headquarters—United placed an undersea telephone cable in

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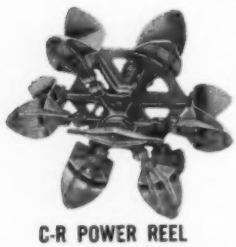
Old Lincoln Highway at Pa. Turnpike, Trevose, Pa.



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After two years of hard work by our chemists, this product has been perfected. It will remove all stains from the new plastic telephones . . . does not affect the cases in any way . . . is non-caustic, non-corrosive and non-inflammable . . . will not injure hands using it . . . makes cases look like new

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and electronics, headquarters—United States Air Force; Brig. Gen. C. B. Root, chief—electronics defense systems division, headquarters—Air Materiel Command; and officials of the Western Electric Co.'s defense project division—David Younger, W. B. Albert and N. R. Weible. General Grant talked over the cable to the Cape Dyer terminal 700 miles to the south, across Baffin Bay.

This undersea cable which incorporates built-in amplifying repeaters spaced some 40 miles apart, provides reliable, time-tested communication channels between the United States Air Force Base at Thule, Greenland and other military stations in northern Canada. It is similar in construction to the existing transoceanic telephone cables and will be used for military purposes. Work on the cable started in the summer of 1958, and was completed late in 1959, at a cost of about 9 million dollars.

It was "touch and go" as to whether the cable would be completed on schedule because of two factors: the relatively short periods of the year when the Baffin Bay and Davis Strait region would be free of pack ice and icebergs, and the fact that no one had ever placed an undersea telephone cable in Arctic waters.

In addition, an emergency developed —one with possible serious consequences for the cable project—in June of 1959 the British cable ship Ocean Layer was gutted by fire while completing the second transatlantic cable.

The Ocean Layer had been scheduled to lay the second of the twin 700-mile BMEWS cables. The first cable had been put down successfully the summer before by the British Post Office cable ship, HMTS Monarch. To surmount the emergency, two vessels, the American Cable & Radio Corp.'s cable ship John W. Mackay, and the United States Military Sea Transport Service cargo ship Lt. James Robinson, worked as a team.

The Mackay, when fully loaded, carried only enough cable to reach approximately half the distance from Cape Dyer to Thule. The other ship was used to re-supply her. The Robinson was converted from a standard cargo ship to a cable carrier, by around-the-clock shifts of workers at an east coast navy shipyard.

The Mackay loaded cable at the Simplex Wire & Cable Co. docks in Newington, N. H. in late August then sailed

Both winner and losers here seem to be enjoying the outcome of General Telephone Co. of the Southwest's annual companywide extension telephone sales campaign. All employes and each division participated. In November, for the third successive year, the western division, headquartered at Brownfield, Tex., retained the title, "Extension Sales King." Its employes are reported to have sold at the rate of 44 extensions per day, accumulating a total of 1,113 sales for the division during November's 25 working days. C. C. Scott, division plant superintendent, R. H. Priest, division commercial superintendent, and W. J. Nichols, division traffic superintendent, made a wager on whose department would make the most sales, the loser of the campaign to ride a "humble mule" around the town square of the loser's district headquarters, which in this case, turned out to be Carlsbad, N. M. Happily leading the mule, standing left, is wager winner, Mr. Nichols, whose traffic division employes made what he described as a "magnificent sales effort;" mounted, the loser, Mr. Scott of Brownfield, Tex.; in rear, J. L. Kemper, division manager, also of Brownfield, who "refereed" the ride; and Mr. Priest, division commercial superintendent, witness for the losing division.

time by dialing two digits on the call-

He further ordered the Defense De-

to Cape Dyer, on Baffin Island, and began laying cable northward toward Thule.

Meanwhile, the Robinson loaded the remaining lengths of the needed cable and sailed directly to Thule. When the Mackay completed laying the first segment of the cable, she buoyed the cable end and sailed for Thule.

There, she reloaded her cable tanks from the Robinson, then raced back down Baffin Bay until she located, picked up, and spliced into the buoyed end of the cable. The Mackay then continued northwards to Thule, laying the last segment of the second cable. Several days later, she reached there and spliced her cable into the shore end.

The first undersea telephone cable in Arctic seas had become a reality—ahead of schedule.

N. Y.'s Governor Proposes State Take Over Excise Tax

New York's Governor Nelson Rockefeller on Jan. 17 proposed that the 10 per cent federal excise tax on telephone service, scheduled to expire at the end of June, be taken over by individual New York school districts for school purposes.

According to a report in the New York *Herald Tribune*, the governor said he would recommend that the legislature authorize school districts throughout New York to impose the tax at their option. Most school districts in New York are only able to tax real estate.

This taxing power would also be made available to New York's six largest cities—New York, Buffalo, Rochester, Syracuse, Albany and Yonkers—whose school systems are now financed independently of regular local governments. In the case of these cities, the power would rest with present taxing authorities.

ICS Adds Radio-Electronics To Its Telephone Course

Because of trends in the Telephone industry to microwave, mobile two-way radio, and radiotelephone service, the International Correspondence School (ICS), Scranton, Pa., has prepared a new course, "Telephony and Radio Communications."

The course embodies all existing texts in the ICS-tested telephony course, the school says, with the addition of a special selection of radio and electronics texts which are included to provide a background in basic electronics and radio communications.

"Telephony and Radio Communications" also includes the text, "Components and Circuits in Electronic Data Processing Machines," which the school feels, will serve the telephone industry as an effective training aid.

Other texts included in the new course are:

Cathode Ray Tubes.
Principles of Radio Communication.
Semiconductor Diodes and Transistors.
Transistor Circuits and Applications.
VHF and UHF Circuits.
Microwave Techniques.
Radio telephone Transmitters.

OK Four Fire and Emergency Reporting Systems in Neb.

The Nebraska Railway Commission on Dec. 29 authorized The Lincoln Telephone & Telegraph Co. to establish four emergency reporting and calling systems for fire departments to accommodate requirements for various size communities.

System No. 1 is designed for use by very small communities where there is no volunteer fire department and residents assume responsibility for handling fire calls, or where there is a small number of volunteer firemen.

This system provides one main telephone listed for fire calls and up to nine extension telephones installed at various homes or places of business. Activation of a siren or other fire signaling equipment is the responsibility of fire department personnel or community residents.

Regular rates apply for the business main telephone and extensions, together with necessary mileage.

System No. 2 is designed for communities which have a larger volunteer fire department. It is the same as No. 1 except that telephone instruments are equipped with push buttons instead of dials which, through the use of Lincoln T&T equipment and circuits, will operate a signal control relay which in turn will activate a siren or other signaling apparatus. Local commercial power requirements are supplied by the municipality.

Regular rates apply for circuits and instruments. In addition, a monthly rate of $5.00 is made for common relay equipment located in the telephone exchange building.

System No. 3 is designed for large volunteer fire departments or combinations using paid and volunteer fire members. It provides a business main telephone listed for fire calls and installed at a location where there is 24-hour daily attendance. It also provides an instrument and circuits by which an attendant can reach up to six predetermined firemen's telephones at one

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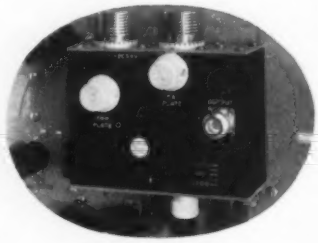

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time by dialing two digits on the calling instrument. Other groups of six are reached by different dialing codes.

In addition to the regular main station, mileage and miscellaneous equipment charges, a monthly rate of $7.30 applies for one special connector switch and a $3.00 charge for each group calling unit (6 lines per unit). A termination charge of $300 applies for the calling units which is reduced 1/36th for each month in service.

System No. 4 provides PBX equipment for large, full-time fire departments. Regular tariff charges are applicable to all trunks, stations, mileages and miscellaneous equipment except that which must be specially engineered to meet varied and complex requirements that are often involved. Rates and charges for such special equipment will be based on the costs involved.

Wis. Worker Wins Security Suit in Federal Court

A discharged Wisconsin Telephone Co. employe, John A. Dressler of Milwaukee, has won his suit to obtain security clearance in U. S. District Court, Washington, D. C., it was reported on Jan. 17 (TELEPHONY, Feb. 14, 1959).

The court declared null and void the U. S. Defense Department's denial of security clearance to Mr. Dressler. That department had in 1956 said it had "reason to believe" that the telephone worker had been a member of the Socialist Workers Party, a Trotskyite group on the attorney general's list of subversive organizations. Dressler denied that he was a member of the party.

Following the 1956 denial of security clearance, Dressler, who was secretary of Milwaukee local 5501 of the Communications Workers of America, and had been a private branch exchange installer for the company from 1940 to 1956, appeared before the Chicago industrial personnel hearing board.

He objected to the board's jurisdiction and to the Defense Department's action. When overruled, he filed suit against then Secretary of Defense, Charles E. Wilson, and subsequently, against Secretaries Neil McElroy and Thomas S. Gates Jr.

In immediate action on the Jan. 17 ruling of the district court, Federal Judge Edward A. Curran, Washington, signed a consent order stating that Mr. Dressler was not granted the right to confront adverse witnesses and was not allowed to cross-examine adverse witnesses in his original hearing.

Judge Curran ordered that all "rulings, orders and determinations" of the Chicago hearing board be "declared null and void and of no legal effect."

He further ordered the Defense Department to expunge from the record all rulings relating to Mr. Dressler.

Attorney M. Michael Essin, acting in Dressler's behalf, said that he would file for his client's reinstatement with the Wisconsin Telephone Co. and for back pay.

Telephone company officials stated they would have to see the court order before commenting.

GD Promotes Tait; McLean Named S-C President

James D. McLean will join General Dynamics Corp. as president of the Stromberg-Carlson Division, it was announced Jan. 14 by Frank Pace Jr., chairman of the board. Mr. McLean, who will also become a senior vice president of General Dynamics and a member of the corporation's board of management, will assume his duties after Feb. 15.

J. D. McLEAN

Formerly president of the Hoffman Laboratories division of Hoffman Electronics Corp. in Los Angeles, Mr. McLean will succeed Robert C. Tait, president of Stromberg-Carlson since 1949.

Mr. Tait, a senior vice president of General Dynamics, will be associated with the corporate office and will assume new corporate-wide responsibilities.

Mr. Pace announced also that Allan R. Shilts, controller of Stromberg-Carlson, has been named to the newly-created post of vice president and general manager of Stromberg-Carlson.

A graduate of Massachusetts Institute of Technology, Mr. McLean holds the BS and the MS degrees in electrical engineering. Previous to his association with Hoffman Electronics, he had been for 10 years with the Philco Corp., had served as commercial manager of Station WPTZ-TV in Philadelphia, and as

vice president and general manager of Philco's government and industrial division.

Prior to joining Philco, Mr. McLean had been with the General Electric Co. for 10 years as a development engineer and a sales manager.

R. C. TAIT

Mr. McLean is a director of the Western Electronic Manufacturers Association and of the Armed Forces Communication and Electronics Association. He is also chairman of the Western branch of the military products division of the Electronics Industry Association and a national vice

A. R. SHILTS

president of the National Security Industrial Association. In addition, he also holds membership in the Society of Motion Picture and Television Engineers, the American Rocket Society, and the American Ordnance Association.

Mr. Shilts joined Stromberg-Carlson in July of 1959 following two years as controller of the export division of

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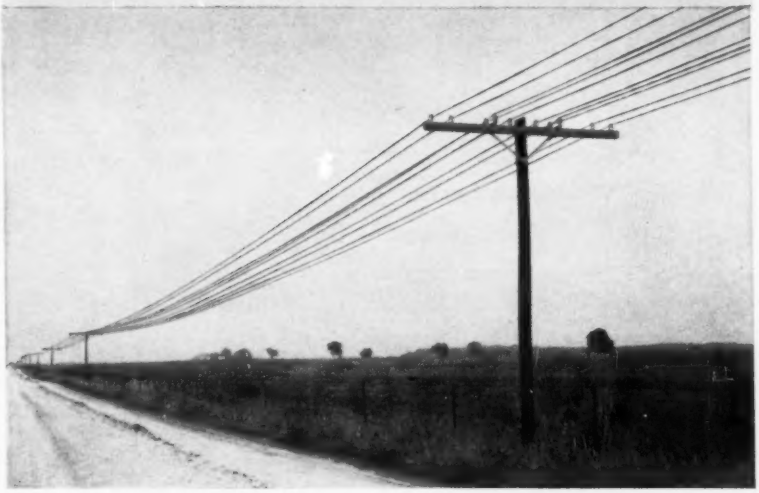

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the Chrysler Corp. Before that, he was treasurer of the Crown Cork & Seal Co. for two years and had spent seven years as manager of general accounting for the Lincoln-Mercury division of the Ford Motor Co.

Prior to these associations, he had been with Price Waterhouse & Co. and Haskell & Sells, public accountants.

He is a graduate of Mount Union College, Alliance, O., and holds a masters degree in banking and finance from New York University.

Bonnar Rejoins North After BDSA Service Tour

J. G. Bonnar has returned to active status with the North Electric Co. after a six month's tour of duty with the Business & Defense Services Administration in Washington, D. C., H. C. Ryon, North vice president has announced.

Mr. Bonnar will be assistant to the vice president, Telephone Division, in his new capacity. His responsibilities, Mr. Ryon said, will include liaison with the larger Independent and Bell companies at engineering and administrative levels, along with coordination of telephone division administrative work in a staff capacity.

Mr. Bonnar is a graduate of Ohio

J. G. BONNAR

State University, with a degree in electrical engineering. He has been associated with North Electric for over 23 years, and during that period has been both actively and administratively engaged in design work for the customer and manufacturing requirements, as well as in the research and development aspects of the company's products.

His most recent assignment with the communications division of the BDSA brought him into contact with the industry's defense and mobilization planning as well as the day-by-day aspects of the associations between the government and the communications industry, both as to operations and manufacturing.

Di Scipio Appointed Market Director for IT&T

Alfred di Scipio, management consultant who has specialized in marketing and business planning for the electronics industry, has been appointed to the new position of vice president and director of marketing for International Telephone & Telegraph Corp., H. S. Geneen, president of ITT, has announced.

ALFRED DI SCIPIO

For the last three years Mr. di Scipio has been a management consultant with McKinsey & Co., Inc., international management consulting firm, where he participated in a wide variety of corporate studies, both domestic and international, with emphasis on marketing and business development in the electronics industry.

Prior to that, he was a product director for Chicopee Mills, Inc., an affiliate of Johnson & Johnson, which he joined in 1950. In this post he was charged with planning and coordinating all aspects of his division's product and market development activities, including research, manufacturing, marketing, and finance.

Mr. di Scipio, a native of Boston, Mass., is a graduate of Boston's Northeastern University, where he received the degree of bachelor of science in electrical engineering. He later attended New York University to earn a master of business administration degree in marketing. He is a member of the American Management Association and the American Marketing Association.

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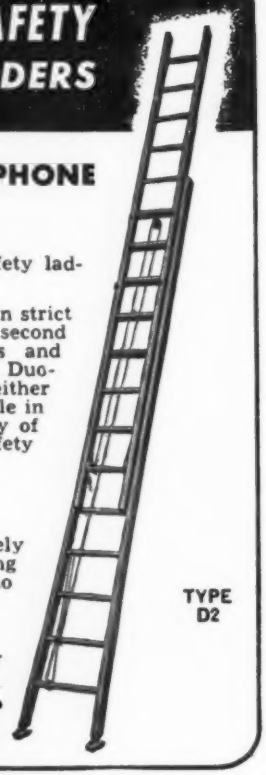

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GT&E Sets Up Research Center; Names Dr. Trotter

The General Telephone & Electronics Corp. announced on Jan. 11 the formation of General Telephone & Electronics Laboratories, Inc., a wholly-owned subsidiary which will engage in a wide range of scientific research activities in the communications and electronics fields.

DR. HERBERT TROTTER JR.

In making the announcement, Donald C. Power, chairman and chief executive officer of GT&E, said that the nucleus of the research organization will be the Bayside, N. Y., research laboratories of Sylvania Electric Products, Inc., a GT&E subsidiary. He said that additional facilities are contemplated in the future as the work of the laboratories expands.

Dr. Herbert Trotter Jr., senior vice president—research & engineering for Sylvania, has been elected president of the General Telephone & Electronics Laboratories, with headquarters to be established at the General Telephone Building, 730 Third Avenue, New York City.

In addition to serving as chief executive of the new subsidiary, Dr. Trotter has been assigned responsibility for directing and coordinating functionally the research and engineering activities of the various manufacturing subsidiaries. These include Sylvania, Automatic Electric Co., Leich Electric Co., Lenkurt Electric Co., Inc., and various international manufacturing companies.

"The mission of this new research organization will be to assure that General Telephone & Electronics is in the forefront of the unprecedented technological progress we foresee in the years ahead," Mr. Power stated.

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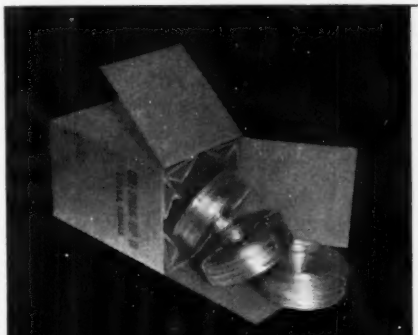

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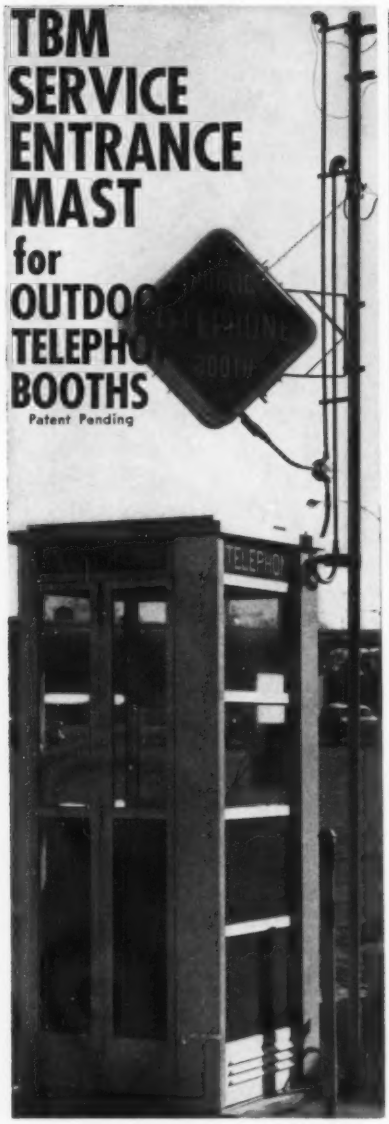

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search and development by industry, the government, universities, and private laboratories will rise to more than 20 billion dollars annually over the next seven or eight years, against 10 billion dollars today, the GT&E chairman commented: "Every aspect of our economy is becoming increasingly complex, and industry must gear its long-range planning to this trend. We must find entirely new ways of doing things; new and better services and products must continually be developed, to meet the expanding needs of our customers. This requires research and development activities on a sufficiently broad scale to assure significant scientific breakthroughs."

Mr. Power said that the new research subsidiary will have a two-fold responsibility: Basic research and advanced development in major technical fields of broad interest to the current operations of GT&E; and exploration of new technical fields from the standpoint of potential interest to the company.

Applying the findings of the research laboratories, the various engineering laboratories of the subsidiary manufacturing companies engage in research and development work closely related to the product fields of their respective companies. This includes not only product development, but also new and improved manufacturing techniques, particularly in the field of automation.

Referring to a recently completed study of the over-all GT&E organization's technical personnel and facilities by Lt. Gen. James D. O'Connell, retired Chief Signal Officer of the U. S. Army, Mr. Power said that General O'Connell's survey was "extremely beneficial in evolving a program for maximum utilization of our technical resources and capabilities."

General O'Connell joined GT&E as a consultant in July, 1959, has been elected a vice president of the laboratories, and will serve as a member of the management organization. Other officers are Dr. Robert M. Bowie, vice president and general manager; Dr. Bennett S. Ellefson, vice president; Arthur L. B. Richardson, vice president and general counsel; Jacob B. Taylor, vice president-finance; Ralph D. Heusel, treasurer; and H. H. Howlett, secretary. Mr. Taylor will continue in his basic assignment of executive vice president-finance of GT&E; Mr. Heusel will continue as treasurer; and Mr. Howlett as assistant secretary. Mr. Richardson will continue as vice president-general counsel and secretary of Sylvania.

The Sylvania Research Laboratories, which currently are located in four buildings in 50-acre Sylvania Center, have a total staff of about 350 persons. The principal research fields are physical electronics, systems and circuits, chemistry, solid-state physics, and metallurgy. Among the specific projects now under way are those involving intensive study and development of new principles of data processing and display, communication, lighting, television and radio, power transmission, semiconductor devices and electron tubes, and related projects.

The over-all GT&E organization includes 24 laboratories and about 3,000 scientists and engineers, exclusive of technical personnel in the telephone operating companies. The research and development activities at various levels of the organization represent the expenditure of some 20 million dollars annually, exclusive of the many projects being undertaken for the government.

Kellogg Names Medlock, Dunkle As Executives

Robert O. Medlock has been appointed military communications coordinator of Kellogg Switchboard & Supply Co., communications division of International Telephone & Telegraph Corp.

In making the announcement, T. P. Leddy, vice president and director of government relations, said Mr. Medlock would coordinate Kellogg activities on the Atlas Missile program.

Mr. Medlock went to Kellogg from the Martin Co., Denver, Colo., where he served as staff assistant to Maj. Gen. K. E. Tibbetts (USAF-Ret.). Previously, he had been affiliated with Associated Missile Products Corp. and the Hughes Aircraft Co.

A native of Colorado Springs, Colo., he was graduated from Colorado College there with a bachelor of science degree in physics.

Mr. Medlock is a veteran of World War II, having served in the Air Corps and Signal Corps from February, 1941, to February, 1946. He saw action in New Guinea, the Philippines, Papua, Okinawa and Korea. He held the rank of warrant officer when discharged.

Kellogg also has announced that Stuart L. Dunkle has been elevated from military automation coordinator to Western region manager for government relations of Kellogg Switchboard & Supply Co., communications division of International Telephone & Telegraph Corp. He will manage Kellogg government relations activities in nine western states, Alaska and Hawaii.

Mr. Dunkle joined Kellogg a year ago after 14 years with the communications division at Hill Air Force Base in Utah. He was civilian chief engineer at the time of his departure.

Previously, he served three years with the Federal Communications Commission as a monitoring officer in field services.

Avnet Electronics Names Two Sales Executives

Lester Avnet, president of the Avnet Electronics Corp., has announced that Clark J. Grey has been promoted to vice president in charge of sales of the Avnet Electronic Sales Corp., a wholly owned subsidiary.

C. J. GREY

In that capacity Mr. Grey will serve as eastern director of sales and national advertising director for the Avnet Electronics Corp.

Mr. Grey, who joined Avnet in 1956 as sales director, was previously associated with Bendix-Scintilla as senior application engineer.

Avnet has also announced that Robert M. Hayflick has been appointed eastern sales manager. Before joining Avnet, Mr. Hayflick was application engineering manager of the Production Research Corp. of Thornwood, N. Y.

The Avnet Electronics Corporation assembles and distributes connectors and other electronic components for the electronics, aviation, missile, business machine and other industries. Avnet has plants in Westbury, L. I., Los Angeles and Sunnyvale.

Sierra Electronic Reports Sales Personnel Changes

Sierra Electronic Corp., a division of Philco Corp., has announced the appointment of H. D. Farnsworth as manager of product planning; and of Sanford K. Ashby as sales engineer.

Mr. Farnsworth was formerly with Stromberg-Carlson Co. in Los Angeles, where he was manager of field services for the company's digimatic numerical

H. D. FARNSWORTH

control systems. Prior to joining Stromberg-Carlson in 1957, he was associated for 10 years with Philco Corp. in various engineering supervisory capacities. His experience also includes six years with the Ford Motor Co.

In his new position with Sierra, Mr. Farnsworth will coordinate the development of new additions to the company's commercial product line. Sierra products include a broad range of communications test and power measurement equipment, as well as custom test equipment and telemetry systems.

Mr. Ashby, Sierra's new sales engineer, was formerly a partner in Ashby Associates, manufacturers representatives in Dayton, Ohio. Prior to that he was a field engineer for Philco's Tech-Rep Division.

A native of Kentucky, he attended Pratt Institute, Brooklyn, N. Y., and the University of California.

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International Paper Co., Wood Preserving Division — 926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

Piedmont Wood Preserving Company —Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address inquiries to Box 1662, Spartanburg, S. C.

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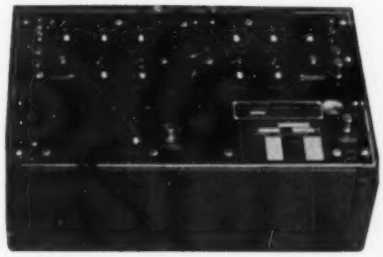

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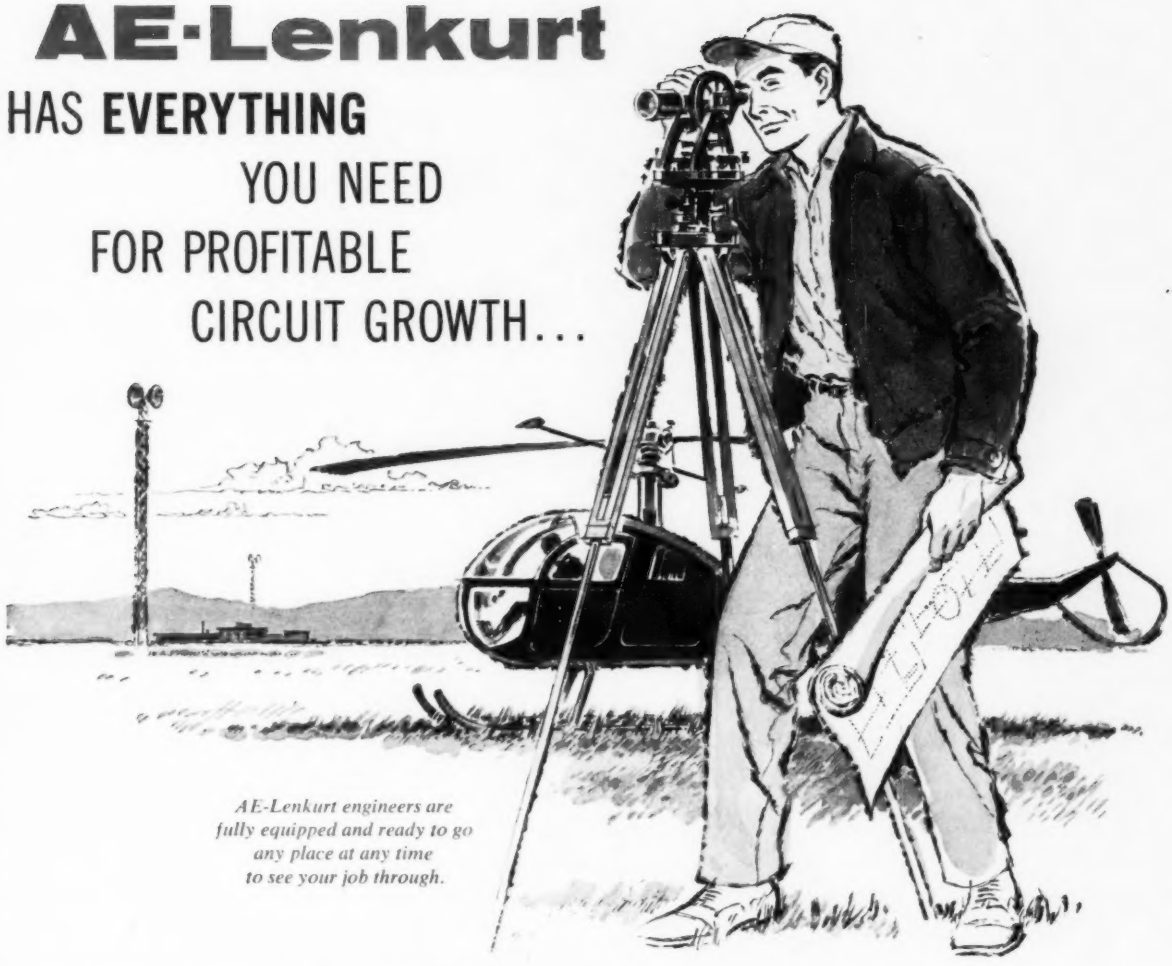

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